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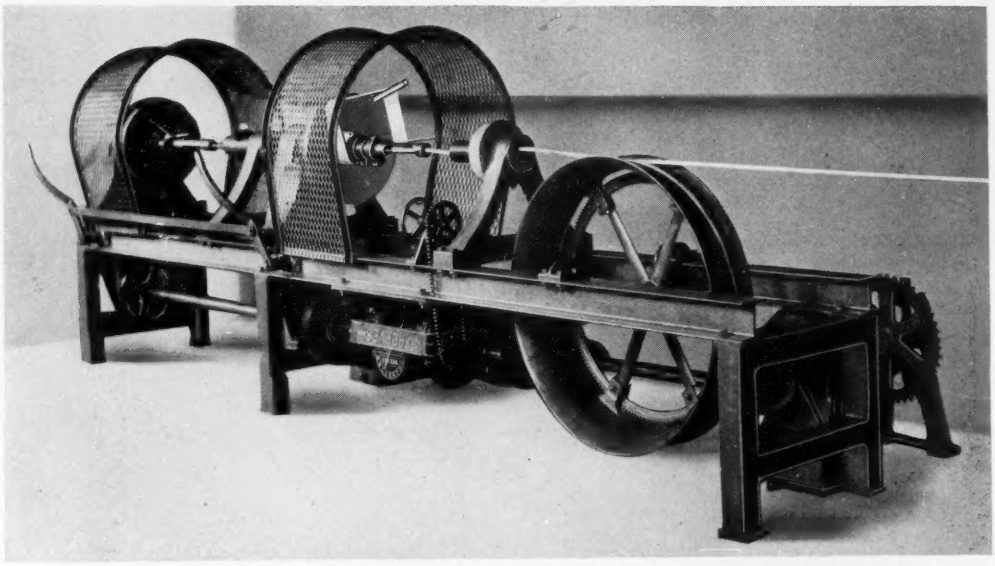

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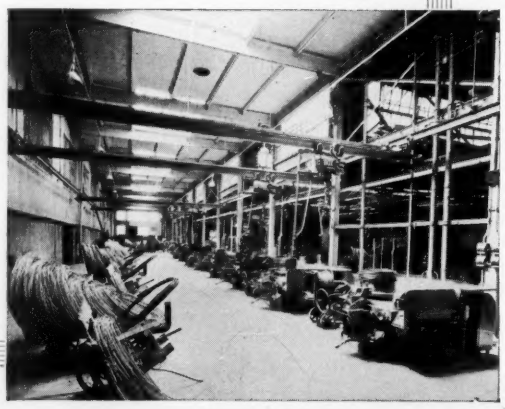

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WIRE & WIRE PRODUCTS

A monthly publication devoted to the production of Wire & Wire Products in all metals from the bar to the finished wire product.

Vol. 6 May 1931 No. 5

Official Publication of The Wire Association

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551 Fifth Avenue, New York City. Telephone: Murray Hill 10191

Publication Office: Washington, N. J.
Annual Subscription, U. S. and Canada $5.00

50 Cents a Copy Issued Monthly Foreign, $7.50

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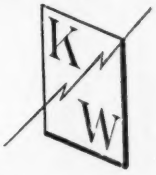

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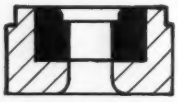

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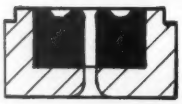

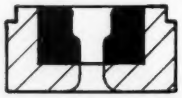

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WIRE
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A Monthly Publication Devoted to the Production of Wire and Wire Products in all Metals from the Bar to the Finished Wire Product.

Vol. 6 MAY, 1931 No. 5

Electric Equipment for Wire Drawing

By T. R. Rhea

Industrial Engineering Dept.,
General Electric Co.,
Schenectady, N. Y.

THE type of motor and control equipment to be applied to a wire drawing machine is determined by the type of machine and the nature of the work which the machine is called upon to perform. The type of motor which is suitable for single block equipment may be entirely inadequate for a multi-pass machine. It is the purpose of this paper to discuss the various types of machines and the type of motors and control which experience has determined as the most suitable.

Electric Equipment

ELECTRIC equipment applied to wire drawing machines must meet the following general requirements:

A. The block should run at a slow speed for threading through an initial length of wire, or other means of threading through an initial length must be provided.

B. The block should accelerate smoothly from rest or low speed, to running speed, after wire is threaded, to prevent breaking the wire.

C. The block should stop quickly in case a man becomes entangled in the wire, or in case the wire becomes snarled.

D. If several kinds of wire are to be drawn on the same bench, the block must have speeds which are best suited to the various kinds of wire.

E. The motor must be able to start up the block after a power failure with wire in the die or dies in cases where there are no clutches between the motor and the blocks.

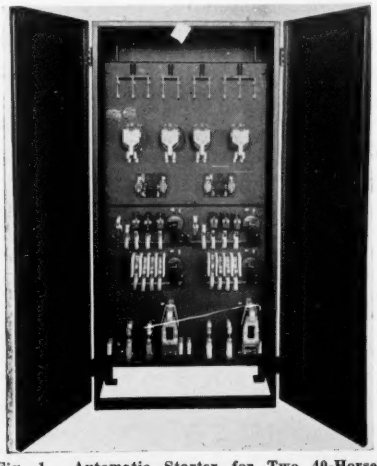

Fig. 1. Automatic Starter for Two 40-Horsepower, 1200-r. p. m. 550-Valt, 60-Cycle, Wound-Rotor Induction Motors Driving Wire Drawing.

Since there is considerable dust and dirt in the air around a wire drawing machine, all d-c motors, and the control equipment for both d-c and a-c motors, should be protected by enclosing covers. In the case of d-c motors, top half enclosing covers are sufficient. It is not absolutely essential that a-c motors be protected with top half enclosing covers.

The control equipment for almost any type of drive should include, of course, an overload relay and an undervoltage relay, which will shut down the machine in the event of a voltage failure and which will make it necessary for the machine operator to return his control switch or master to the "off" position before restarting.

Control equipment should in all cases contain a magnetic line contactor which can be actuated from a push button or opened when the safety bar is depressed for a quick stop. As mentioned before, all magnetic control equipment should have enclosing cases to protect it from the ever present dust and dirt.

The above are general requirements that apply to any type of wire drawing equipment. There are four principal types of wire

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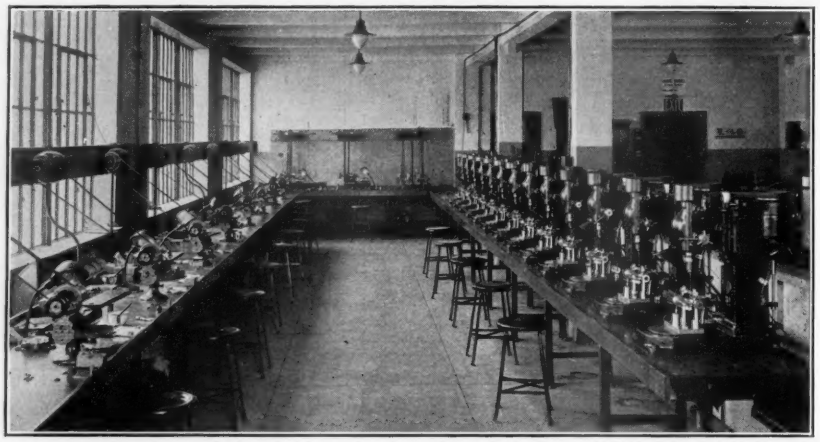

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drawing machines and, of course, many minor variations of each type. Let us consider these four general types of wire drawing equipment and the motor and control best suited for driving such machines.

Group Drive Constant Speed

SOME of the older installations consist of several blocks geared to one motor, which runs continually at constant speed. Each individual block is stopped by lifting it out of its gears by means of a foot treadle and is started by dropping it back into mesh. In some cases a clutch is used for starting and stopping the block.

Where there is no clutch in the system, the rod is pointed and stuck through the die a few inches. It is then seized in a clamp which is attached by means of a short piece of chain to a hook. This hook is then dropped through a link of a separately driven, slowly moving chain which moves along the face of the bench. A few feet of wire is thus drawn through the die. This slowly moving chain arrangement makes it unnecessary for the block to run at slow speed for drawing through the initial length.

After wire has been drawn through the clamp is released and the end of the drawn wire is clamped to the block which is at rest. The block is then dropped into gear and starts up very suddenly so that quite often the rod breaks at the clamp, necessitating repointing, etc.

Evidently the maximum speed at which wire can be drawn on this type of installation is limited by the ability to start the block without too frequent breakages of the wire and also, by the ability of the gears and mechanical parts to stand the stress of instantaneous acceleration.

Where clutches are used, instead of dropping the block directly into mesh, it is possible to eliminate the slowly moving chain and to perform the threading operation from the block itself. The clutch in this case eliminates the sudden jerk of starting, and if it does not slip too much, or grab too quickly, it has an operating advantage over the type where the block is dropped directly into gear.

Type of Motor

THIS type of installation is ordinarily driven from a constant speed a-c motor. Wound rotor induction motors are quite frequently applied to this type of drive, but since there is no slow speed requirement and the motor may be accelerated at no load without regard to whether or not there is wire in the dies, either synchronous or squirrel cage induction motors may be applied. While these latter motors do not have the starting torque of a wound rotor induction motor, they can ordinarily be started up light and after they come up to full speed the clutches or gears can be engaged, one at a time.

Synchronous motors are more desirable for the larger drives as they have higher efficiency and a much better power factor. Squirrel cage induction motors are usually applied to the smaller sizes.

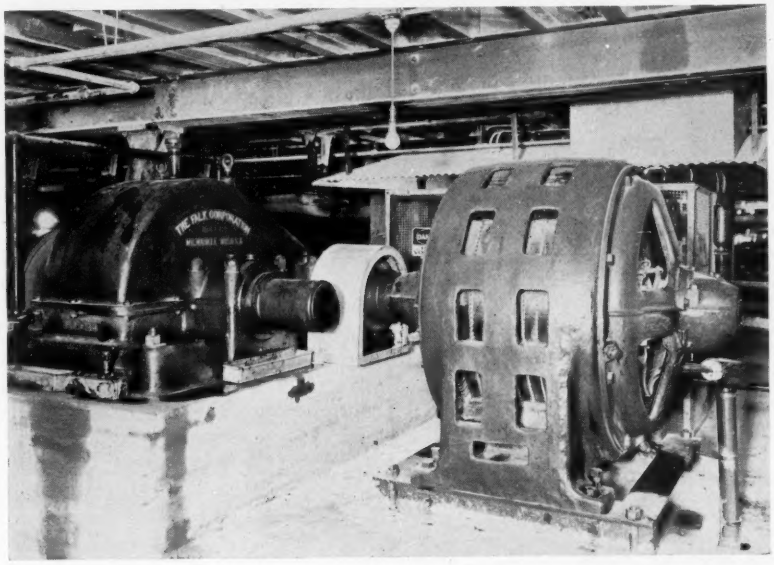

Fig. 2. Wound-Rotor Induction Motor, Installed in Basement Driving a Number of Wire Drawing Blocks Through Clutches.

Control Type

THE wound rotor induction motor can be controlled with an ordinary drum switch and it is usually made non-reversing. There is a definite leaning toward full magnetic control, however, even for this type of motor where the starting is infrequent, and even though slow speed operation is not required. If drum control is used on the wound rotor induction motor drive, it should at least have a magnetic line switch for protection and safety.

With a drum switch alone and no magnetic line switch in the control, the safety device must be mechanical and the block must be stopped by disengaging the gears or releasing the clutch.

It is not necessary to plug or reverse the torque of such a driving motor to bring it to a quick stop, as the friction is great compared with the stored energy of the system. If the line switch is opened the motor will stop quickly.

As mentioned in the general requirements, the control should include overload and undervoltage protection and an emergency stop push button station.

Individually Driven Blocks

IN this type of machine each block is driven by a motor. This arrangement eliminates the clutch and has an inherent advantage over the group drive in that the top speed is not limited by the pos-

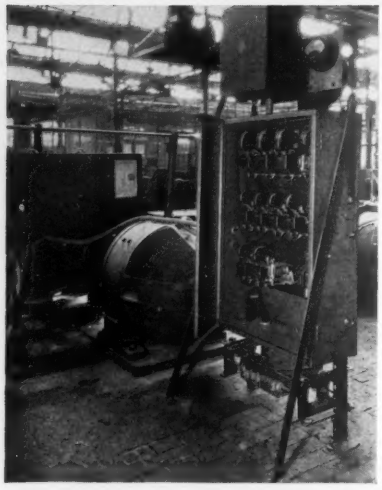

Fig. 3. Adjustable Speed d-c. Motor and Control Driving a Single Wire Drawing Block—Rear View.

sibility of a jerky start with a clutch. With such a drive it is possible to accelerate slowly and smoothly after the wire has been attached to the individual block, if the proper motor and control is applied.

In this type of bench, the slow-moving chain for drawing the first few feet of wire is eliminated and the clamp is hooked into a notch in the block itself, which is then slowly revolved until sufficient wire has been drawn to enable the operator to clamp the wire directly to the block. The block may then be accelerated rapidly to full running speed without jerking.

One requirement of this type of drive is slow speed on the first point of the control for threading through the die. It is essential that breaking and repointing be entirely eliminated with this type of drive. Since the maximum speed is not a compromise between the best production speed and the ability to start, as in the case of the group drive. Smooth but rapid acceleration after the wire is attached to the block is required.

Practically an instantaneous stop must be provided by the motor and control, as there are no clutches in the system. The need for practically instantaneous stop on any wire drawing operation may be appreciated when it is considered that wire is drawn on this type of machine at 600 FPM or better, which is ten feet per second; and, therefore, if a man should become entangled in the wire when three or four feet from the block, the time allowable for stopping is extremely short.

Individually driven blocks may be driven by either constant speed motors or by adjustable speed motors, depending on the requirements.

Constant Speed Drive

TO meet the demands of this type of block a wound rotor type of induction motor should be used. The slow speed for threading is obtained by inserting resistance in the secondary circuit of the motor.

It would not be practical to apply either a synchronous motor or squirrel cage induction motor to this type of drive, because of the difficulty of getting the slow speed operation for threading. Even though the threading operation is done at slow speed it requires the same amount of pull on the wire to draw it through as at high speed. The wound rotor induction motor is admirably suited to give the required high torque at low speed and while the synchronous motor may have sufficient torque to start the wire through the die, there would be the tendency to jerk up to speed at once.

Type of Control

THE control for this type of drive is usually full magnetic and controlled by means of a multi-point master switch. On the first point of the master switch, resistance is left in the secondary and the motor runs at the slow or threading speed. It is possible, of course, to provide more than one threading speed, but this is seldom, if ever, necessary.

Since it is necessary to start and stop the motor at least once with every coil of wire drawn, drum control is apt to give trouble under the frequent starting, stopping and jogging service. It is possible, though not quite so convenient, to use drum control with a primary line contactor, so that the drum controller does not have to break the secondary current. This is usually called semi-magnetic control, and while it is successful, it is not so convenient for the operator.

The control should be arranged so that one or two "stop" push buttons are conveniently located around the bench. The control should also be arranged so that it will be within easy reach of a man if entangled in the wire at the block. The control is usually arranged to open the motor line when the handle is pulled toward a man in this position. The controller, therefore, should have either a vertical or horizontal handle, depending on the details

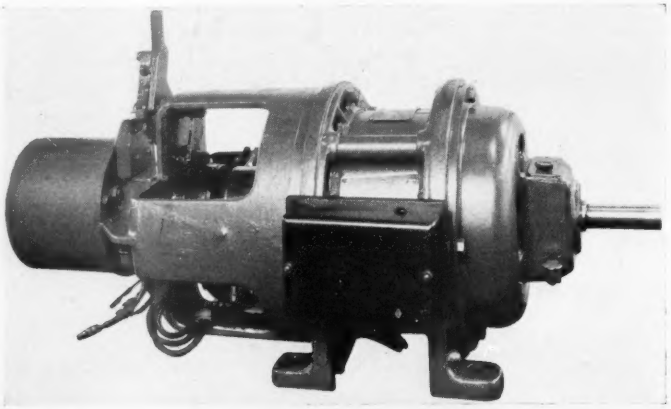

Fig. 4. A-c. Brush-Shifting Adjustable-Speed Motor Used Where d-c. Is Not Available and Adjustable Speed Characteristics Are Needed.

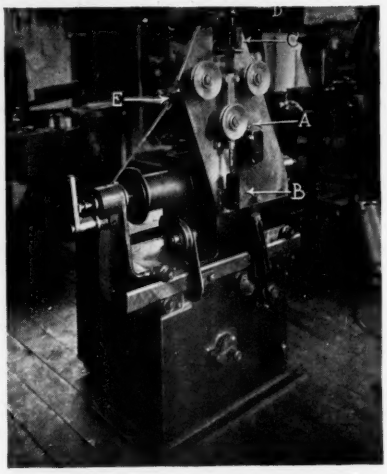

Fig. 5. Thyratron Constant Loop Control for Constant Tension Wire Reeling on Copper Wire Drawing Machine. A. Floating Sheave. B. Dashpot. C. Movable Core Solenoid. D. Weight for Adjustable Tension. E. Reel Motor. ✦

of the machine, but should always operate with a straight push or pull and not with a rotating motion like a street car controller.

The machine may be equipped with a safety bar across the front of the bench, so that if a man is pulled against this bar, it will automatically stop the motor. In many cases the wire being fed into the die is first run through a loop in the safety bar, so that in event of a snarl or knot forming in the incoming wire, it will strike the loop and pull the safety bar over and shut down the bench.

It is usually not necessary to provide for plugging for this kind of a drive, as the motor will come to a rest very quickly when the line contactor is opened. If wire remains in the die, the load imposed will quickly use up the energy stored in the rotating part of the machine and bring it to rest.

It is possible, with a given load on the wound rotor induction motor, to run at a speed which is less than the top or synchronous speed of the induction motor, if it should be required. This could be accomplished by running on an intermediate point of the master switch, and by retaining in the secondary of the induction motor a certain amount of resistance which would give the necessary slow speed with a definite load on the block. However, such a method continuously expends energy in the secondary resistance and it is not to be recommended for continuous running. In case such a control were to be desired for running over any considerable period of time, it would be necessary to make the secondary resistance much heavier to keep them from burning up. However, such a provision for heavy secondary resistances can be made at a trifling expense, and there is no reason why the operator should not be supplied with an intermediate point on the master switch for running at somewhat reduced speed if conditions require it. This would be a point—say at 75% speed at 75% load, and would be distinct from the slow speed threading point.

There is a tendency to simplify the control for this type of drive by giving the operator only one point, and that is full speed ahead. In this case the control is so arranged that when the operator first pushes the master switch to the "on" position, all of the secondary resistance remains in and the slow threading speed is maintained for a definite period of time, such as 15 seconds. At the end of this time, if the operator leaves the master switch in the "on" position, a relay automatically functions and removes the secondary resistance in either one or two steps. This type of control is being used and is found to be very satisfactory.

Adjustable Speed Drive

THE principal reason for resorting to individually driven blocks is to obtain greater flexibility. Individually driven blocks are, therefore, often driven by adjustable speed d-c motors in order to obtain the greatest flexibility. Such flexibility allows a greater variety of sizes and kinds of steel to be drawn on the same machine. For example, high carbon and alloy steel require slower drawing speeds than low carbon steel.

Since the wound rotor induction motor is inherently a constant speed machine and such speed control as is possible by cutting in secondary resistance is quite inefficient, an adjustable speed, shunt wound d-c motor is the logical choice for such a drive.

The motor for such a drive usually has a 2:1 and occasionally a 3:1 or even 4:1 speed range, by means of shunt field control. That is, it will have a base speed of say 400 RPM, and by weakening its field, its speed can be adjusted to any value up to its maximum. This is done without the additional expenditure of energy in a secondary resistance as in the case of the wound rotor induction motor.

It is necessary, to control the motor speed down to a much lower value than 400 RPM, in order to thread the initial length of wire through the die. This is readily

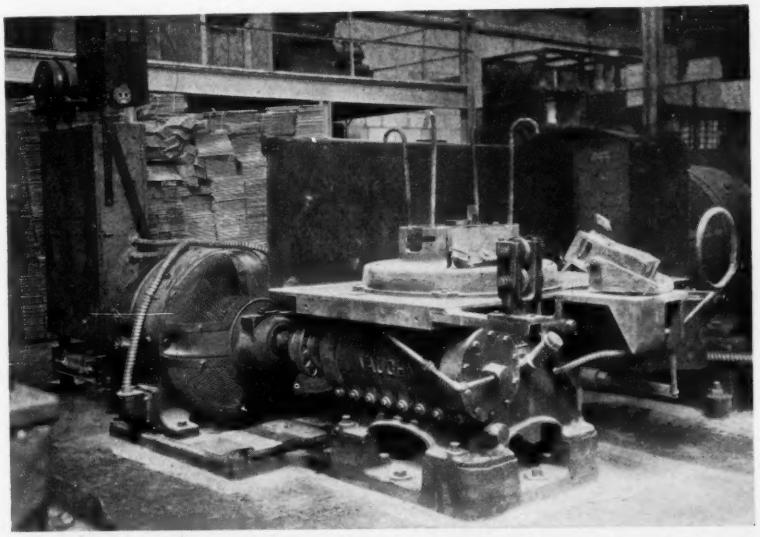

Fig. 6. Adjustable Speed d-c. Motor and Control for a Single Wire Drawing Block—Front View.

accomplished by means of the control and is explained later.

The d-c motor is capable of very sudden stopping by means of dynamic braking. Dynamic braking is applied by placing a resistance shunt across the armature of the motor and opening the line to the motor. The motor then acts as a generator as it slows down, and dissipates its energy of rotation in the resistor, thus bringing the machine to a very quick stop.

Where there are only a few motors to be installed and no d-c is available, adjustable speed a-c motors may be used. These a-c motors are of the brush-shifting commutator type. They may have a speed range from approximately 50% below synchronous speed to 50% above synchronous speed. They are inherently constant torque machines while the d-c machines are inherently constant horsepower. This is an advantage for the d-c adjustable speed machines as more torque is frequently required at low speed than at high speed. Heavier wire is drawn at slower speeds and requires more torque than lighter material drawn at higher speeds.

The a-c adjustable speed motor is somewhat more efficient than the d-c system when the losses of the motor generator set are taken into account. The question of cost will usually decide whether a-c adjustable speed machines or d-c adjustable speed machines are to be used. Where there are only one or two motors and there is no available d-c supply, a-c machines will usually prove more economical. Where there is a greater number of machines to be used, it is usually more economical to use d-c and supply them from one large efficient motor generator set.

The a-c adjustable speed machine is capable of giving the required threading speed by the insertion of resistance in its secondary.

Type of Control

THE control for the d-c motor is either of the semi-magnetic type with a multi-point drum switch, or full magnetic control, giving slow speed for threading on the first point and dynamic braking in the "off" position. There is usually included one or more "stop" push buttons, conveniently located around the machine, which, when operated, apply dynamic braking to the motor.

The drum switch on the first point allows the slow speed operation for threading and as it is turned to the full—"on" position, it cuts out in successive steps resistance in series with the armature of the motor. When the drum switch has reached the full—"on" position, the motor is running at base speed. If speeds above this value are desired, and they usually are, a further increase in speed is obtained by the hand operated field rheostat. This rheostat is, of course, set only once for the speed at which it is desired to draw the wire. On starting each new roll of wire, this rheostat is left set and is automatically shorted out by means of a contactor until the motor reaches base speed, at which time this contactor is automatically opened and the motor continues to accelerate up to the rheostat setting. It is possible, of course, to provide more than one field accelerating contactor, but this is usually not necessary inasmuch as the wire is already taut and the acceleration upon opening the full field contactor takes place very smoothly. This is due largely to the natural magnetic inertia of the motor field.

Low threading speed is obtained by using a shunted armature connection. The resistance which is used across the armature is also used for dynamic braking and thus serves a double purpose.

The same safety features, such as a safety bar or safety loop apply to this type of motor, as well as to alternating current constant speed drive.

On account of the frequent starting, stopping and dynamic

(*Please turn to page 185*)

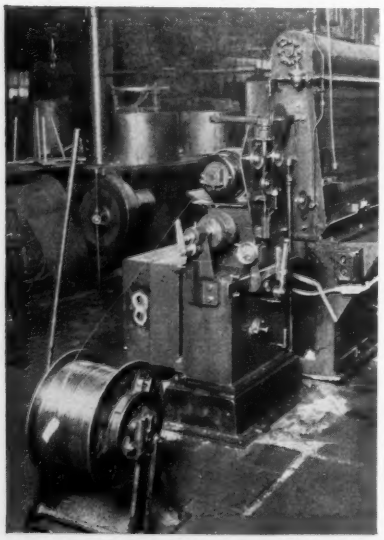

Fig. 7. Thyratron Control for Wire-drawing Winder.

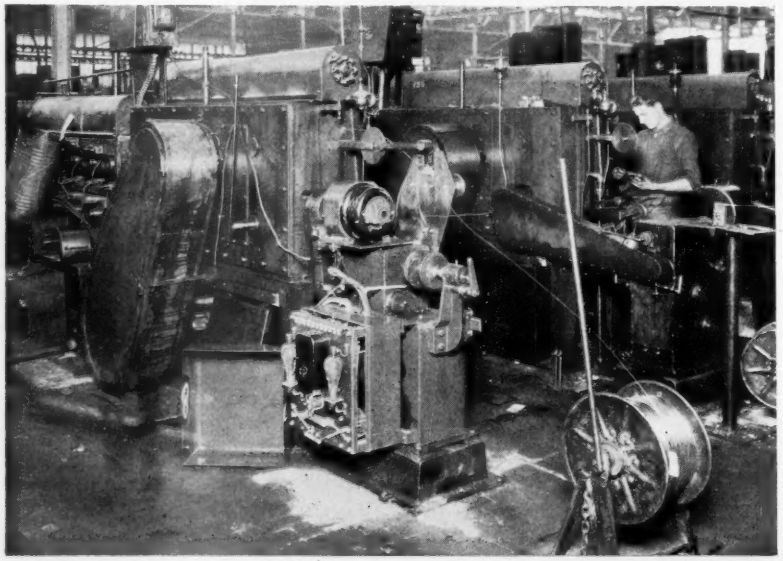

Fig. 8. Front View Showing the Thyratron Tube with Cover Removed.

Lubricants and Cutting Fluids

By A. H. d'Arcambal*

General Types of Cutting Fluids and Advantages of Each--Fitting the Fluid to the Metal ▼ ▼ ▼ ▼ ▼ ▼ ▼

CONSIDERING the factors involved in the machinability of metals, there are five of major importance. The fourth of these is the cutting fluid or coolant and lubricant used. This subject has been considered of such great importance by the A. S. M. E. that a couple of years ago they appointed a sub-committee to investigate various cutting fluids. The A. S. M. E. sub-committee has issued two very interesting and important bulletins since that time.

Classifications

THEY classified cutting fluids into the following divisions:

The first type is known as dry cutting. That is, cutting without a coolant but using an air blast, or air suction. The next classification is known as aqueous, or water solutions, using ordinary water plus an alkali. The third classification includes emulsions, soluble oils and compounds. Under the fourth classification comes oils, and under oil they have the fixed oils, the mineral oils, the compounded or blended oils, the sulphurized mineral oils, the sulphurized lard oil base, and the mineral oil, with oleic acid. We have found that the cutting oil or cutting fluid is a very important factor to be considered in machining. In our plant we made a very thorough investigation about three years ago, and finally adopted the following oils as best suited for our various requirements:

*Consulting Metallurgist, Pratt & Whitney Co., Hartford, Conn. Extracted from paper before Western Metal Congress, San Francisco, Feb. 1931.

WHILE this article was written for those interested in the machining of metals, as in modern machine tools, in some respects it approximates the needs and interests of wire drawers so closely as to justify its publication.

▼ ▼ ▼ ▼ ▼ ▼

FOR the majority of our machine jobs, except lathe turning and thread milling, we use sulphur base oil. We buy the sulphur base material and mix the base with seven parts of a good grade of machine oil. . . . For our tougher jobs, instead of mixing seven parts of machine oil with one part of the sulphur base oil, we use four parts of the machine oil with one part of base and one part of kerosene. On production lathe turning we use an ordinary emulsion oil, mixed with twenty parts of water. For thread milling we use what we call the amber fluid. This oil contains a little over one per cent of sulphur and is clear and light in color.

You might be interested in the practice of a large aircraft company in regard to the various cutting oils used. For machining aluminum, they use a high-grade fuel oil, light in color. A sulphur base oil is used for turning steel, as well as for threading, reaming and milling operations. A paste properly mixed with water is used for turning brass and bronze.

Cutting Oil

ONE of the plants I heard about recently had a very interesting experience in regard to cutting oil. They were using a certain type of oil on a tough machining operation, and one day the oil caught on fire. They hurried and obtained a fire extinguisher, putting the fire out by blanketing the flames with the carbon tetrachloride. They continued the machining operation, and obtained a better finish, so at the present time they are using cutting oil diluted with carbon tetrachloride and obtaining good results.

Mr. Flanders, a prominent member of the A. S. M. E., stated at a recent A. S. M. E. meeting that his company made a die head with Acme thread chasers for a concern in the Middle West. They tested the die head before it left their plant on material supplied by the customer and obtained a very satisfactory thread, with a good finish. As soon as the customer received this die head they placed it in service, but obtained a very unsatisfactory finish on the pieces. After a careful study by a representative of Mr. Flanders' company, they decided to change the type of cutting fluid used by the customer, resulting in a very satisfactory thread.

Put These Dates Down In Your Calendar!

June 15th to 19th, 1931

And Come To The

WIRE ASSOCIATION

Meeting and Exposition

At the Auditorium, Cleveland, Ohio

This is an open invitation for you to visit the Exhibition as a guest of the Wire Association, if you are not a member

Come and exchange ideas! See how the other fellow does it!

Operating exhibits will be shown by the following firms:

Micro Products Company. A new type of rod welding machine in operation.

Hallden Machine Company. New types of wire straightening and cutting machines in operation.

Union Wire Die Company. Diamond and Tungsten Carbide dies with a production operating exhibit.

Sleeper & Hartley, Inc. Continuous wire drawing machines and spring making machines in operation.

Morgan Construction Company. Morgan-Connor wire drawing machines and auxiliary equipment in operation.

Ludlum Steel Company and Master Wire Die Company. An operating exhibit showing the manufacture of Tungsten Carbide dies and machines for refinishing, regrinding and testing dies before use.

New England Butt Company. An operating exhibit of high-speed bunching machines, vertical cotton serving machines for covering rectangular, square and round insulated wire and a new type weatherproof braider.

R. B. Hayward Company. Steel reels, shipping reels, etc.

Lewis Machine Company. Straightening and cutting machines in operation.

Carboloy Company. Exhibiting "Carboloy" wire, rod and tube drawing dies.

Sefton National Fibre Can Company. Exhibiting a new type of fibre spool for magnet wire, etc.

William Haddow. Exhibiting the Haddow die recutting and polishing machine in operation.

In addition to these exhibits specifically relating to wire drawing etc., there will be about 200 exhibitors of general mill equipment, electrical apparatus, lubricants, etc.

Manufacturers interested in exhibit space can obtain full information from

RICHARD E. BROWN, SECRETARY

THE WIRE ASSOCIATION 551 FIFTH AVE., NEW YORK, N. Y.

Come to the Technical Sessions and Learn

Look Over This Interesting Program.

Technical Sessions---Wire Association---Will Be Held Tuesday, Wednesday and Thursday

June 16th, 17th and 18th, 1931

AT THE AUDITORIUM, CLEVELAND, O.

PROGRAM — TUESDAY, JUNE 16th, 1931, 9:30 A. M.

"History of Wire Industry" by Kenneth B. Lewis, of the Morgan Construction Company. A paper on the historical side of the wire industry showing the changes and developments in production methods.

"Heat Treating" by Joseph A. Doyle, Vice-President of the W. S. Rockwell Company.

"Bright Annealing and Galvanizing" by W. H. Spowers, Jr. Consulting Galvanizing Engineer.

"Rust Protection of Wire Products with Cadmium" by Clayton M. Hoff, Engineer, Grasselli Chemical Company.

The Story of Steel—A motion picture showing the manufacture of rods, rails, etc. together with inspection, cutting and finishing methods.

Steel Wire Products—A motion picture showing the manufacture of steel wire products, the preparation of rolling, drawing of wire, galvanizing of wire, making wire fence; winding wire and cold rolling of flat stock. Also shows the methods of heat treating, annealing, pickling, etc.

PROGRAM — WEDNESDAY, JUNE 17th, 1931, 9:30 A. M.

"Wire Mill Management" by E. G. Brown, Asst. Factory Manager, the U. S. Rubber Company, Bristol, R. I. A paper on the readjustment of manufacturing costs to meet changed business conditions.

"Wire Mill Cost Accounting" by L. D. Granger, Assistant to the Vice-President and Chief Metallurgist of the Wickwire-Spencer Steel Company, New York, N. Y.

"Lubrication" by R. T. Kline, Lubricating Engineer, the J. T. Robertson Company, Syracuse, N. Y.

"Lubrication and Application of Tungsten Carbide Dies" by C. R. Longwell, Engineer, the Carboloy Company, Newark, N. J.

U. S. Government motion picture entitled **"Submarine Cable Laying".** *This picture will show in detail the process of production of submarine cable and its actual use under working conditions. The production man will get an excellent idea of the necessity for a rigid adherence to specifications in manufacturing such cable.*

PROGRAM — THURSDAY, JUNE 18th, 1931, 9:30 A. M.

"Some Phases of Insulating Work" by P. O. Reyneau, of the Western Electric Company, New York, N. Y.

"Manufacture of Insulated Wire & Cable" by J. W. Hackett of the Okonite Company, Passaic, N. J., accompanied by a motion picture film showing manufacturing processes of that firm and the machinery and methods used in the insulating of electric wire and cable.

"The Story of the Fabrication of Copper"—A motion picture prepared by the American Smelting & Refining Co., showing rolling of copper rods and drawing of wire: methods of annealing, pickling, washing and drying; method of coiling, cooling and gauging; making of trolley wire, winding wire; stranding and twisting into cables: and testing methods.

"The Manufacture of Wire Rope"—A motion picture of the technical processes of the John A. Roebling's Sons Company, Trenton, N. J., showing the steel mills, the blooming and rod mills, the wire mills, heat treating and cleaning methods and finally the huge machines fabricating the wire into many different kinds of rope.

A most interesting feature will be the U. S. Signal Corps official war film showing the use of wire of various kinds under actual combat conditions in the World War. This will be shown Wednesday afternoon as a separate exhibit. All production men should see this film as it will show the reason for definite rigid specifications for the various kinds of wire which they use.

Make your Reservation Now at the Hotel Cleveland and Write For Special Reduced Fare Railroad Certificate to

RICHARD E. BROWN, Secretary

THE WIRE ASSOCIATION, 551 5th AVE., NEW YORK, N. Y.

Lead Wire

Its Manufacture and Use

By

J. A. McDonald, Vice Pres. and Plant Supt.

Northwest Lead Company, Seattle

THE manufacture and use of lead wire offers a story of real interest to the technician as well as the layman. Contrary to the accustomed service of a metallic wire, the lead product is not used as a binding or tying material, but serves an individual need which its peculiar characteristics fulfill in the best way.

At the Northwest Lead Company plant, located at Seattle, Washington, lead wire is produced in all sizes from 1/16-inch to 1/2-inch. It is made of both a 99.99% pure lead content and also with various percentages of antimony which are added for hardening and stiffening purposes.

Production Method

THIS lead is produced on a vertical hydraulically-operated pipe press, which operates up to a pressure of 500 tons. Those familiar with the extrusion of lead pipe will at once understand this process. From the same press lead wire, lead cames, and small sizes of lead pipe are all produced. A press of 1000 tons pressure also operates in this department, producing the larger sizes of seamless lead pipes, ranging up to 12-inches in diameter, which is the largest lead pipe size produced in the country.

Press Operation

THE operation of the press is quite simple.

A melting pot with two and a half tons capacity is conventiently located immediately behind the press. From this, charges of approximately 125 pounds of molten metal are drawn into the press cylinder, where the metal is solidified. Hydraulic action on a ram (upon which the cylinder rests) forces the lead up against a die which is suspended in a stationary nozzle, and the wire is thus formed in size to correspond with the die. As the wire is extruded from the press it is run over a large drum down to the floor level where it is wound on spools for shipping.

The use of the product determines the size of spool to be used.

Uses of Lead Wire

LEAD wire of the larger sizes is most commonly used in the process of "lead burning" which is a trade name given to the unique method of fusing two pieces of lead together. The practical application of "lead burning" is found to a large extent in industrial work as, for instance, in tank linings where sheets of lead—hung side by side—must be

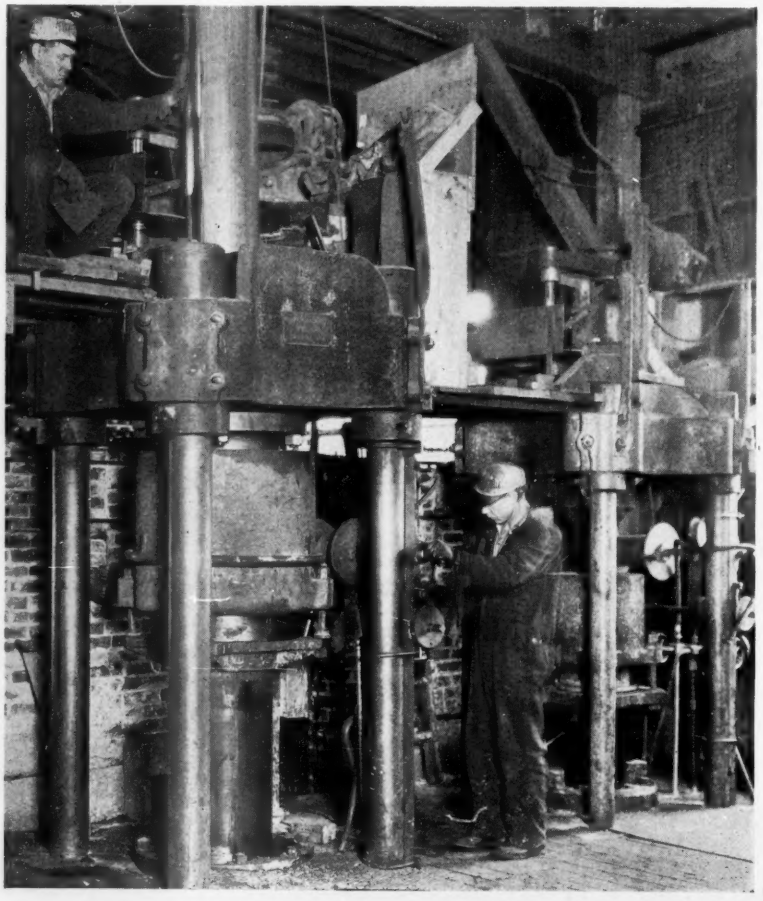

Fig. 1. Extruding 12" Seamless Lead Pipe. The Smaller Press in the Background Operates in the Same Manner and is Used for Lead Wire and Small Sizes of Lead Pipe. ✦ ✦ ✦ ✦ ✦

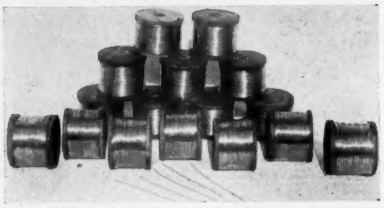

Fig. 2. 10-pound Spools of Lead Wire for Use With Lead Coating Equipment. ✦ ✦

brought together without the use of any foreign metal. This is done by first scraping the adjoining edges of the metal bright and clean and then by melting the edge of the lead with a small torch and, (where seams run horizontally) at the same time adding sufficient lead to build up the thickness and strengthen the sheet at its edges. The added lead is usually brought to the torch in the form of a lead wire (termed "burning bar"). The wire gives the operator a convenient form to handle and is easily taken from the spool as needed. Spools for this purpose generally weigh up to 300 pounds and on a good-sized lead lining job several spools of wire will often be used.

Spraying Lead Wire

ANOTHER very interesting use of lead wire—and one which is marking rapid progress in this country as wel las abroad—is in the aplication of lead coatings by the patented "Metalayer" method. This consists of a mechanical "gun" into which lead wire of a definite size is automatically fed, atomized, and fired. The atomized particle leaves the nozzle of the gun at a speed of approximately 3000 feet per second.

For equipment subject to a mild corrosive action, a lead coating applied in this manner is often very practical. It is not as yet a feasible method for applying a lead-lining where severe conditions are met with, due to the fact that this coating is generally limited to a few thousandths of an inch in thickness, whereas acid or chemical attack is often so severe as to require a protective lead lining 3/16-inch or more in thickness. However, for protection from mild action, lead coatings of this nature are proving very efficient and economical. Lead wire for use with this machine is usually shipped on spools of ten pounds or more.

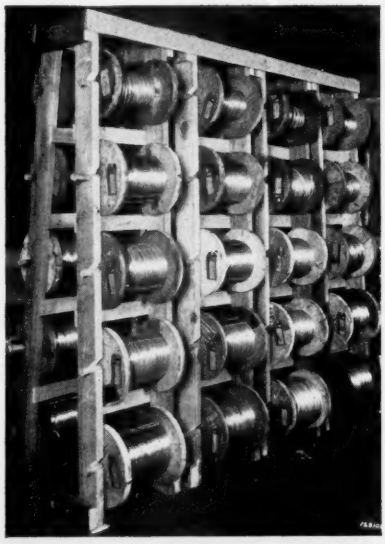

Fig. 3. Method of Handling Stock Spools of Lead Wire. This Rack Contains All Standard Sizes from 1/16″ to ½″ in diameter. ✦ ✦ ✦

Fig. 4. Note Lead Wire Entering Gun, and Atomized Particles Leaving Nozzle. ✦ ✦

Novel Uses of Lead Wire

EXPERIMENTS are also under way at the present time to determine the value of lead wire as a heating element when buried underground and subjected to an electrical current. This is still in the experimental stage, but promises to develop into an important method of protecting shrub and plant life from damage during winter weather, as well as stimulating their growth. Lead appears to be the ideal material, because when buried and charged with electricity, it exhibits the greatest efficiency in transmitting heat to the surrounding soil.

Fig. 5. Lead Burner Using Lead Wire to "burn" or Fuse Lead Joints. ✦ ✦ ✦ ✦

Sculptors often use lead wire as a skeleton base upon which to build small statues and pieces of their art work. It is occasionally used by pattern makers also, in the elementary processes of forming patterns.

Lead wire is now receiving favor in decorative work. For instance, in rain leaders, where various sizes of wire are intertwined and burned into place in the form of a braided border or design. Lead work of this type gives a very charming and artistic touch to the home, and is now being promoted by many of the nation's leading architects.

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Obsolete Wiring---New Market for Copper

According to the Copper & Brass Research Association, approximately 55,000,000 pounds of copper are required annually for wiring installations covering domestic and commercial uses of electricity.

Increasing dependence upon electricity for various services, particularly in domestic use, is responsible for the fact that the older type of wiring installation is no longer fully adequate to service requirements. Use of heavier gage wire is favored by the National Electric Light Association and principal electrical manufacturers. A change from 14 gauge wire, which now represents about 60 per cent of the yearly footage installed, to 12 gauge would alone increase copper consumption for wiring purposes about 7,000,000 pounds annually. Adequate wiring if adopted to replace all out-model installations now in service would require about 400,000,000 pounds of copper.

No Rejects

Personalities and Gossip of the Wire Industry as Told by a Roving "Trouble Shooter" ▼ ▼ ▼ ▼ ▼ ▼ ▼

BACK on the job again, after a six weeks stay in a hospital, where your *Trouble Shooting* friend just escaped the scrap heap, I find things about as they were. Stretched out on an immaculate bed in a too clean room, breathing scented sanitary air, my seven league boots limp but impatient in the corner, this gypsy mused and smiled. "Wire mill men and their worries." Not exactly an exalted subject, but to one whose livelihood is gained because he has a sympathetic ear it is a subject of absorbing interest. All those of you who have been crabbing thruout the winter, take note that Spring is here and with it I am lead to believe there is some evidence, still green as yet, of a harvest to be reaped later on. Hope does spring "eternal." Queer that men who have watched springs come for so many years have seemed so anxious about this one. How short our memories are. The boys who said, "Now is the winter of our discontent" and "Oh! wind if Winter comes, can Spring be far behind?" were only poets, but they certainly knew what depressions were like along in late January.

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The more I realize the importance of wire in the industrial picture of this country, the more it surprises me that there is no recorded history of the men living and gone who have helped to make it great. Many men of national prominence have come via the wire mill route, many now active in wire have contributed greatly to the world's store of knowledge and modern production methods.

One of the foremost leaders in steel in this country, came to his present eminence from no less a beginning than wire drawer, lubricant mixer and toter of his own drawing. The strange thing about growing tall is the fact that from where your head is your feet appear out of focus. This man is pleased to be known as self-made and recalls with pleasure his original arduous work but he does not recall the fact that in 1885 he lost his job because he was a delegate to the Wire Drawers Union convention at Wheeling, West Virginia. It's such a funny balled-up world after all, that those who retain their senses of humor should from the heights survey their long up-hill climb, cognizant of the fact that even losing one's job can at times be considered a good break.

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Fancy a wire drawer going in for poetry! One of the dyed in the wool old timers has turned his hand to it and rather shamelessly he has asked me to burden you with it. This depression certainly expresses itself in queer ways. I can picture a social minded enthusiast going into ecstacies over what he would term the "Cultural Value of Enforced Leisure." After you have read the poetry of my friend, who is ordinarily honest and hard working, you will perhaps be forced to agree with some of the old pastors, "The devil finds work for idle hands".

Well, here goes:

The Subway

Screeching, reeling, careening
The iron gourmand
Twists its freight
Along its speckled inky path.
Lurching, caroming, straining
The metal torture
Grinds its maniac cargo
Grist for his master.
Braking, jerking, hurtling
The snake bellied monster
Spews forth its bile
Democracy's Galahads.
Clanging, slamming, banging
The impatient comet
Laps up with multitudinous lips
New converts.

But, as Dr. Cadman would say, "Then again as a matter of fact" you can't say our friend's entire New York trip was a failure. He is the only person I ever knew who could catch and tame the spirit of the subway in a very few words. So much for poetry by wire drawers. If enough of you write in, of course not neglecting to mention the station through which this program came to you, you might learn who this budding Keats is and where he works. For the time being however, Mother and child are doing well.

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I, for one, am looking forward to the convention at Cleveland and to seeing my friends from all over the country. Those new entrants to the industry, the Packard Cable Company, with their new and very excellent copper drawing plant at Warren, Ohio; Walter Smith, that genial transplanted down-easterner who has come to love Cleveland with all the ardor of original man; Walter Stone looking much more healthy than he did last year, apparently fifteen years younger; Mordica, who although from Sparrows Point is really the Eagle of his section of the country; Seymour of Page Steel and Wire, shifted from a one horse mill in Dunellen, New Jersey to one of the finest and most up to date steel wire plants in the Pittsburgh district. I would be very disappointed if Lynch and Shillito of Union Drawn at Beaver Falls did not make their appearance, and it

(*Please turn to page 195*)

New Literature for the Wire Industry

New Three-language Technical Dictionary

In this handy pocket-size technical dictionary, the Author has arranged the words in three groups, the same words but indexed and arranged in German first with the English and Italian equivalents, then English first with the German and Italian meanings in that order, and finally in Italian with German and English renderings.

As stated in the preface this is the second edition, revised and enlarged, and containing the largest possible number of terms as found in reading foreign technical publications and books. A good slant on its niche of greatest usefulness lies in the statement that it is intended for the engineer and business man (manufacturer?) reading periodicals and books in foreign languages.

The Author, Hubert Hermanns, besides his publishing business in Berlin, conducts what he calls The International Archives, a business of filing and of abstracting the contents of some 600-odd engineering and technical publications from all parts of the world. Under such circumstances he is in an unusually favorable position to put out a suitable dictionary, but has called to his assistance the European representative of The Penton Publications, and a prominent Italian engineer and author.

By keeping down the number of terms it has been possible to compress this work into a pocket size, which with the thumb indexes makes it very handy to carry and use.

Techno-Dictionary (English, German and Italian), by Hubert Hermanns, Berlin, Germany. 4¼x6, 432 pps, thin paper, stiff paper covers, thumb indexed, conversion and temperature tables.

New Edition of Books on Patents

The book is written in terms the business man can understand, and covers the essential features of our patent, trade-mark and copyright laws.

The patent law section of the book explains who may obtain a patent, what may be patented, the importance of specification and claims, patent interferences, reissues, appeals, infringements suits, etc.

The trade-mark end of the book covers trade-marks in general, valid trade-marks, invalid trade-marks, unfair competition, state registration, interferences, oppositions, appeals, infringements, etc.

This fifth edition has been completely revised and brought up-to-date to conform with the changes of the law and practice since the fourth edition was issued in August 1928.

This book also gives a large amount of information about foreign patents and trade-marks which will be of particular interest to manufacturers who export. The index, with which it concludes, affords ready reference to the many important subjects treated in this book.

Patents, Trade-Marks, Copyrights—Law and Practice, by Oscar A. Geier. 6"x9", 128 pps., cloth bound, published by Richards & Geier, Patent and Trade-Mark Attorneys, New York, N. Y. Free upon request.

Recent Trade Catalogs.

"Braiding Machinery," New England Butt Co., Providence, R. I. Two splendid catalogs describing machines built by this concern, one No. 27 devoted to braiding exclusively, the other, a loose-leaf general catalog covering insulating wire and wire rope machinery in addition. The former devotes a number of pages to descriptions of the more common types of braid and the methods of weaving them.

"Pickl-Aide Products," The Weaver Bros. Co., Cleveland, O. This loose-leaf book, devoted to pickling and pickling equipment, gives a brief history of the company and the causes leading to its conception. The main body of the book is devoted to the Weaver's complete line of equipment and supplies. Charts, data and technical information help make it more valuable.

"Mossberg Pressed Steel Beams," Mossberg Pressed Steel Corp., Attleboro, Mass. Catalog No. 105, after emphasizing the advantages of pressed steel in the way of strength and lightness, shows and describes beams, beam heads, drop wires, braider carriers, cop holders and other equipment for textile and allied industries, many of the reels, braiders, etc. being used in wire insulating plants.

"Tungsten, Molybdenum and Special Alloys," Callite Products Co., Union City, N. J. A handbook, giving the history, properties and uses of a number of the somewhat-rare metals and their application to radio, chemical, wire-drawing and other work. In addition it describes the fine wire products of this concern, and gives a number of useful tables.

"Industrial Ovens", Gehnrich Oven Co., Inc., Long Island City, N. Y. A splendid large loose-leaf catalog of this firm's ovens, divided into eight sections, which take up respectively Features of Construction, Gas Ovens, Electric Ovens, Representative Installations, Foundry Ovens, Air Heaters, The Dual Panel and Oven Trucks Racks and Trays.

"Machines for Turning, Straightening & Polishing Bars." Medart Co., St. Louis, Mo. This catalog describes and illustrates the Medart products and gives a list of prominent users, also shows views in the shops, showing machinery and facilities for the manufacture of these machines.

"Modern Metal Handling Methods," Cutler-Hammer Inc., Milwaukee, Wis. Devoted to the C-H red top magnet and sizes in which it is available, also work it has done, is doing and will do in various industries.

'Round the World With the Wire Industry

New German Heat-Resistant Steel Developed

A NEW heat-resistant alloy known as "Sicromal" is being offered commercially by the Vereinigte Stahlwerke A. G. It is furnished in four grades, No. 8, resistant to heat up to 800 deg. C. or 1472 deg. F., No. 9, resistant up to 900 deg. C. or 1652 deg. F., No. 10, resistant up to 1000 deg. C., or 1832 deg. F., and No. 12, resistant up to 1200 deg. C., or 2192 deg. F. It is an alloy of chrome and aluminum, the percentage of chromium being low. The maker claims that it can be employed for a wide range of uses and is offering it at a moderate advance in price over the quotation for ordinary open-hearth steel. It is recommended for pipes and tubes, bolts, nuts, rivets and for castings. It is claimed that it can be electrically welded with ease.

Soviet Manganese Output Sets New Record for Year

PRODUCTION of manganese ores in the Union of Soviet Socialist Republics in year ended September 30, 1930 made a record of 1,444,166 metric tons of concentrated ore, compared with 1,183,880 tons in the precedign year, and 1,245,274 in 1913, according to Soviet information received in the Commerce Department.

Exports were 874,518 tons in 1929-30, compared with 889,969 in 1928-29, and 1,192,790 in 1913. In connection with the general expansion of the steel industry of Soviet Russia, a considerable increase in the domestic consumption of manganese is noted, according to the Soviet report.

Dutch Wire Rod Mill

IT is reported that the Dutch Government will support the establishment of a Dutch wire rod mill, which could supply the wire rods to home industry, which has been suffering gravely from the comparatively high wire rod price the German and Belgian industry were quoting. The Dutch wire makers are compelled to pay the same price or even more for wire rods than bright wire and wire nails are sold for in competition with the Dutch industry.

Big British Cable Firm Lost Money in 1930

THE majority of British cable manufacturing concerns have had happy experiences during the last year or two in spite of the universal trade depression. The Telegraph Construction & Maintenance Company, however, has had less fortunate experience, and the ordinary dividend, which for a long period was maintained at 10 per cent, has been reduced to 7½ per cent. Last year, by making a transfer from reserves not required, the company declared net profits of £77,081 ($389,005). On the present occasion a similar procedure has been followed, and the amount shown as net profit, after drawing upon reserves, is £70,310. The board's policy in paying dividends out of funds accumulated in earlier years is scarcely surprising, in view of the size of the reserves and their liquid character, coupled with the confidence that was expressed a year ago in the future of the business. Of assets amounting to £2,118,000 ($10,590,000), as much as £1,242,349 ($6,211,745) consists of investment securities and cash. The company has no debenture liabilities and its issued capital amounts only to £896,400 ($4,482,000).

THE Austrian wire netting manufacturers have stopped selling for export as a consequence of the very depressed prices and the Czechoslovakian wire gauze manufacturers have stopped export sales for the same reason.

IN 1930 7 new wire nail and wire factories have been established on the Balkan, amongst which two are in Roumania, one in Greece, one in Bulgaria, two in Yugoslavia and one in the European Turkey. This will naturally affect exports of continental wire products to South East Europe.

German Wire Products Prices Reduced

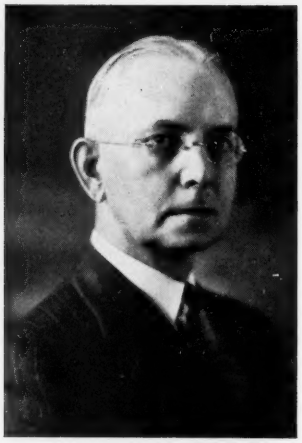
THE prices for wire nails have been further reduced, the official quotations of the German wire association were lowered by s 2/6, but the actual prices are as follows: Bright wire £ 5.0, wire nails £ 5.3.0 basis, annealed wire £ 5.10.6, varnished wire £ 6.2, galvanized wire £ 6.7.6, barbed wire £ 8.15.0 and even s 2 lower per ton and f.o.b. The discount for wire netting and wood screws is unaltered, also the prices for chain link fencing. Wire rods are officially unaltered—decision of the continental cartel, when meeting first March week)—but the actual prices are now below £ 5.2.6 and business was actually done at £ 4.19.0 f.o.b. Prices for Pacific and Gulf coast ports are unaltered.

German Non-Ferrous Exports Improve

THE export business in non-ferrous metal wires, which for many months was very depressed, is showing signs of a recovery. Prices have gone sharply down as follows: Copper wire s 0/6¾ per lb., brass wire s 0/7½, aluminium wire s 0/11 per lb. f. o. b., packing included. From the Overseas markets East Africa is absorbing great quantities. Business with Great Britain in insulated wires is not as satisfactory as in 1930 but nevertheless Great Britain takes monthly insulated wires from Germany amounting to some £ 50.000 (last year up to £ 75.000).

NEGOTIATIONS between the main British, German, French and Czechoslovakian wire rope manufacturers concerning the establishment of a uinform Standard for wire ropes were broken up, as there were too many obstacles against international standardization, especially testing methods for wire ropes.

Outstanding Personalities of the Wire Industry



MALCOLM CARRINGTON

MALCOLM CARRINGTON assumed his new duties as Assistant to the Vice President of the Westinghouse Electric and Manufacturing Co., early this year. Formerly Mr. Carrington was Director of Finished Stocks. In his new capacity, he will have general supervision of shipping stocks, order procedure and office operations.

After graduating from Lehigh University, he entered the railway and motor repair shops of what is now the Virginia Railway and Power Co. Remaining with this organization for several years, he worked successively as a repairman in electric railway repair shops, as an attendant in the battery substation, as an instrument and meter inspector, and as a designer of transmission and distribution systems.

In 1904, Mr. Carrington entered the service of the Westinghouse Company and three years later was made assistant manager of the Railway and Lighting Dept., in the East Pittsburgh Works. In regular intervals he was promoted through the assistant managership of the Chicago District, to General Office Manager, until in 1926 he became Director of Finished Stocks.

Benjamin G. Harmon has been elected vice-president of the Gas Machinery Co., Cleveland, and will be in charge of its furnace engineering division. Mr. Harmon's headquarters will be at the company's Chicago office, 6 North Michigan Avenue.

William E. Hall, New York has been elected president of the Duriron Company, Dayton, O., succeeding the late P. D. Schneck, who was founder of the company. Dudley H. Miller is to be general manager. The company manufactures an acid resisting iron alloy and a nickel-chrome-silicon steel alloy known as Durimet.

Jacob G. Joseph, 70, president and founder of Buffalo Steel Co., Buffalo, died April 2. He had been head of the company since its organization in Tonawanda, N. Y., 31 years ago. He was a member of American Iron and Steel institute and numerous clubs as well as National Museum of Science.

James B. Bonner, sales manager of the Philadelphia district for the Carnegie Steel Co. died recently. He became affiliated with Carnegie, Phipps & Co., Ltd., in Philadelphia about 41 years ago and upon organization of the Carnegie Steel Company became Philadelphia sales manager.

He was vice chairman of the committee on steel distribution for the American Iron and Steel Institute during the war. He was born in Philadelphia July 27, 1863.

E. F. W. Salisbury, formerly with the Cable Accessories Corp., Pittsburgh, Pa., is now connected with the Anaconda Wire & Cable Co., Cable Accessories Dept., Hastings-on-Hudson, N. Y.

V. W. Collins, comptroller, Rome Wire Co., Rome, N. Y., and president, National Association of Cost Accountants, was guest of honor at the March dinner meeting of the Milwaukee chapter of the association.

COMING EVENTS

April 12-16—American Society of Mechanical Engineers. Joint national meeting, materials handling and management division, Cleveland, at the time of the industrial equipment exposition. Sec., Calvin W. Rice, 29 W. 39th St., New York.

May 7-8—Iron & Steel Inst. (Great Britain) Annual meeting at Inst. Civil Engs. Gt. George St. London, S. W. 1. Sec'y 28 Victoria St., London, S. W. 1.

May 18-23—Natl. Elec. Mfrs. Ass'n. Annual Spring meeting, at The Homestead, Hot Springs, Va.

June 8-12—54th Convention and Exhibition, Nat'l. Elec. Lt. Assn., Atlantic City, N. J.

June 15-19—Second Annual Wire Assn. Show and Convention, simultaneously with Iron & Steel Exposition, Public Auditorium, Cleveland, O. Richard E. Brown, Sec'y. Wire Assn., 551 Fifth Ave., New York.

June 22-26—American Society for Testing Materials—Annual meeting, The Stevens Hotel, Chicago. C. L. Warwick, Engineers' Club Bldg., 1315 Spruce St., Philadelphia, Pa.

Sept. 1932—Joint Meeting, Iron & Steel Inst. (Great Britain) and Amer. Inst. Mining & Matt. Engs. Technical sessions in New York. Visits to Bethlehem, Pa., and Pittsburgh, Pa., Washington, Youngstown, Detroit, Cleveland, Chicago, Niagara Falls, Hamilton, Toronto, Montreal, also to Lake Superior mining region, via. Duluth.

British Wire Manufacturer Dies

Sir George Henry Fisher-Smith the famous English wire manufacturer, died recently at his residence at Halifax at the age of 84. Sir George, who was knighted in 1913, was head of the firm of Frederick Smith & Co., Ltd., wire manufacturers, Halifax, and chairman of the London Electric Wire Company and Smiths, London. He was Mayor of Halifax for two years, 1896-97, and for 18 years chairman of the Finance Committee of the Council. In 1918 he was made a freeman of the borough. He was president of the Halifax Liberal Association and had three sons and five daughters.

Sleeper & Hartley
TRADE MARK
REG. U.S. PAT. OFF. & PRINCIPAL FOREIGN COUNTRIES

WATCH THESE MA

MADE IN ELEVEN SIZES

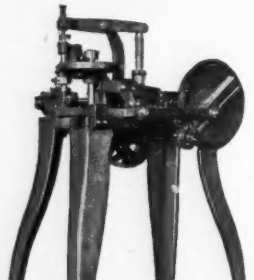
This Universal Spring Coiling Machine, which will be accorded a prominent place in our exhibit, is but one of a series of such coilers which handle oil-tempered wire from .004" to 5/8" in dia.

All styles of springs are coiled from cold wire, the ends of each being closed automatically as desired.

Changes may be made in spring forms by a twist of the wrist while the machine may be completely set up in from 10 to 20 minutes.

AN INTERESTING MACHINE

The Torsion Spring Winding Machine shown here will be on exhibit at Cleveland and is sure to attract much attention. This machine is made in 5 sizes, handling oil tempered wire from .015" to 3/8" in diameter.



A feature of the machine is that it will form ends on one or both ends of the spring putting crimps or loops into the wire as desired.

This machine has a wide range of adjustment. With special tooling it will perform difficult work accurately.

WE WILL exhibit some popu r ty Spring Coiling Machines t the June 15 to June 19.

To the uninitiated these machines, hich often appear to do "tricks.". Stra ge s Coilers; wire runs off at a surprisin rat chines. At the touch of a finger a ring entirely different.

All this may look like trickery to th visi to assure you that there will be no "lack way in which the experts in charge and

The machines are taken directly fro throughout and will perform with e ual accustomed to their operation.

When at the Wire Show step into r bo these machines. Watch them ope te a your plant. Talk to the men oper ng plain the working principles, and th w produce.

Have you some perplexing questio on w Probably our experts and enginee cou not hesitate to make any inquiries u ma remember that the machines on d lay models which we manufacture for a mar Coiling and Wire Shaping. Have r Sa Cleveland exhibit answer your estio specialties.

American Agents

CLEVELAND TERRITORY—Cleveland Duplex Machinery Co.
NEW YORK TERRITORY—Triplex Machine Tool Co.
PHILADELPHIA TERRITORY—Swind Machinery Co.
CHICAGO TERRITORY—Neff, Kohlbusch & Bissell, Inc.
SAN FRANCISCO—L. G. Henes Machine Tool Division of Jenison Machinery Co.
LOS ANGELES—L. G. Henes Machinery Co.

SLEEPER & HA

WORCESTER, MAS

...ACHINES DO TRICKS

Sleeper & Hartley TRADE MARK

...e popu...r types of our Wire Drawing and ...hines ...t the Wire Show in Cleveland from

...hines, ...hich will be in actual operation, Stra...ge spring forms emerge from the ...prisin... rate from the Wire Drawing Ma... ...ger a ...ring changes from its form to one

...y to th... visitor to our booth but we hasten ...e no "...lack magic" or "mystery" in the ...harge ...andle their machines.

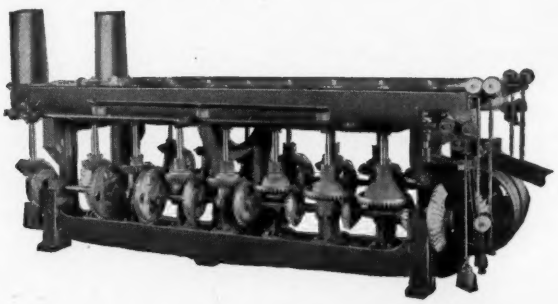
...rectly from stock, are standard-built with e...ual facility in the hands of anyone ...n.

...into o...r booth and get acquainted with ...n ope...te and see where they will fit into ... operating the machines, have them ex... ...and t...n watch closely as the machines

...estio...on wire drawing or spring coiling? ...gineer could solve these problems. Do ...iries ...u may desire. At the same time ... on d...play are but a fraction of the ...e for a manner of Wire Drawing, Spring ...Have o...r Sales Engineer in charge of the ...our q...estions and supply data on our

ONE OF A COMPLETE LINE

With a professional wire-drawer in attendance the machine shown here will be in operation at the Cleveland Wire Show.



This wet draft machine, which draws from No. 22 to No. 36 high or low carbon wire, is one of the best production machines ever placed on the market. Each head will produce 110 pounds of No. 36 wire per 10-hour day and the average operator is able to handle six blocks easily.

With such production figures there is little wonder that we have been called on to manufacture several hundreds of these machines for wire mills throughout the country.

This machine, of the double bank type, is designed to draw fine wires under water but is also used successfully with a dry draft.

We also manufacture a complete line of wire mill equipment, including Wire Drawing machines in all sizes and in single hole and continuous draft styles.

...HARTLEY, INC.

...TER...IASS., U. S. A.

Foreign Agents

UNITED KINGDOM— Fredk. A. Perry, 63 Queen Victoria St., London, E. C. 4

MONTREAL AND TORONTO—Arthur Jackson Machine Tool Co.

AUSTRALIA AND NEW ZEALAND—Edwin Wood Pty. Ltd., Melbourne

JAPAN—Andrews & George Co., Tokyo

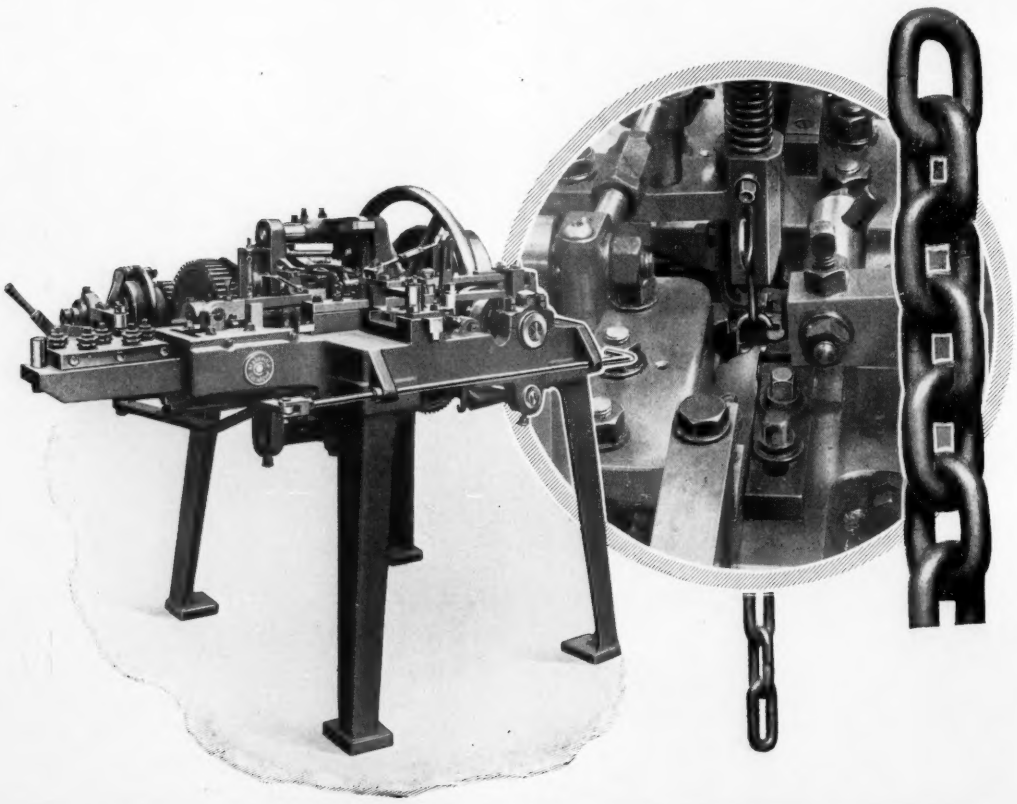
New Type of German Chain Making Machine

By Paul Fidrmuc

RECENTLY great numbers of German wire chain making machines have been exported to America and wire chains made by these machines have captured a great deal of the Trade, which formerly was mainly in hands of the British industry. This is due to the cheap prices for the chains resulting from the improved production obtained from these machines which use principally a bright drawn soft wire. These wire chain machines are for electrical welding and the wires used are from the 1.8 up to 13 mm in thickness. The machine shown in the illustration produces 70 joints of 1.8-3 mm wires per minute. The machine weighs 550 kilos and requires only 1 H. P. to operate and runs at 65 revolutions per minute. The larger machine weighs 3300 kilos and makes wire chains from 9 to 13 mm thickness, 35 joints per minute with 4½ HP. These figures are for the maximum thickness.

If the average thickness is taken into consideration for 9-13 mm wires = 11 mm) the production is 50% greater. All machines are equipped with instant controls which permits the stopping of the machine in any position of the tools. A further advantage is, that the machine can use different diameters of wire and sizes of the chain joints in current production.

The two separate production processes are done automatically. First the cutting of the required wire length from the wire coil and then the bending of the wire to the joining links, with the welding of the links being handled automatically by the electro-welding machine. This method reduces considerably the production costs. Current figures indicate Germany's chain export is now 7-8 times greater than in 1913 and this is mainly due to the improved machine production methods through the use of this and similar machines.



A Review of Recent Wire Patents

No. 1,794,624, METALLIC CLOTH FOR PAPER MAKING MACHINES, Patented March 3, 1931, by Richard Kastner, of Steyrermuhl, Austria. The metallic cloth, according to the invention, is characterized in that it is woven with a multiple weft, i. e., a double weft, the wefts being in contact with one another in the weave. The warp wires lie on the surface for a greater distance than in ordinary weaves and the portion of the warp wires lying over and under the weft have a straight axis running parallel to the plane of the sieve.

No. 1,794,885, SCREW MACHINE, Patented March 3, 1931, by X. Raymond Dodge, of Hinsdale, Illinois. In this screw machine the stock is fed therethrough by frictional gravity, eliminating the spring fed chuck and cam lever. Other objects include new means for adjusting the cutting tool and for bringing the tools to and from the work or stock operated upon, provision of means for self-cleaning of the tools and slides, and for adjusting or timing one mechanism with respect to another for the different operations.

No. 1,794,973, CONTINUOUS METHOD OF CHROMIUM PLATING METALLIC WIRES OR STRIPS, Patented March 3, 1931, by Byron V. McBride, of Irwin, Pennsylvania, Assignor to Westinghouse Electric & Manufacturing Company, a Corporation of Pennsylvania. The process includes drawing the wire downwardly through a suitable chromium-plating solution in such manner that all portions are substantially equidistant from the anode and exposed directly to the voltaic action of the bath, passing it horizontally through the plating solution, while insulating it almost completely from the voltaic action of the bath, and then drawing it upwardly through the solution in such a manner that during the upward travel, all portions are again substantially equidistant from the anode and exposed to the direct voltaic action of the bath.

No. 1,795,216, NAIL MAKING MACHINE, Patented March 3, 1931, by Ralph F. Kiefer, of Pittsburg, Pennsylvania, Assignor to Strowan Corporation, of New York, N. Y., a Corporation of Delaware. An object of the invention is to provide a nail-making machine having mechanism adapted to form the forward end or tip of the nail into a blunt-ended, preferably three-faced tip, and in which the various nail-making operations are coordinated and synchronized from a common driving means. Such a nail is illustrated in U. S. Patent No. 1,446,676, issued September 4, 1896.

No. 1,795,217, NAIL MAKING MACHINE, Patented March 3, 1931, by Ralph F. Kiefer, of Pittsburg, and John P. Ritchey, and Robert J. Farrell, of Ellwood City, Pennsylvania, Assignors to Strowan Corporation of New York, N. Y., a Corporation of Delaware. One of the objects of the invention is to provide means separate from the tip-forming dies of a nail making machine for cutting lengths of headed wire from the nail stock in suitable coordination and synchronism with the other operations of the machine. This, too, is specially adapted to making the blunt-pointed, truncated-tipped nails described in the U. S. Patent No. 1,446,676.

No. 1,795,574, VEHICLE WHEEL, Patented March 10, 1931, by Albin C. Olson, of Duluth, Minnesota. This relates to a wire-spoke wheel, the spokes being arranged in tripodal groups of two side spokes and one central spoke circumferentally about the wheel, the side spokes of one group and the central spoke of the preceeding group being parallel.

No. 1,795,767, MACHINE FOR PRODUCING COILED BODIES, Patented March 10, 1931, by John W. Ekstedt, of Belleville, New Jersey, Assignor to Westinghouse Lamp Company, a Corporation of Pennsylvania. This apparatus relates to means for controlling the diameter and pitch of helically coiled wire, particularly wire of very fine diameter employed in the manufacture of lamp filaments, no mandrel being used.

No. 1,795,994, INSULATION OF ELECTRIC WIRES AND CABLES, Patented March 10, 1931, by Francis Joseph Brislee, of Huyton, Lancashire, England, Assignor to British Insulated Cables Limited, of Prescot, Lancashire, England, a British Company. The process for the manufacture of insulated electric conductors, comprises applying insulation, embodying an esterfied cellulose composition, under approximately atmospheric pressure, in layers around the conductor with textile supports, the insulation being hard and free of solvent, and then heating the insulation to a temperature of approximately 100 degrees C. at which the composition softens and flows so that adjacent layers unite and the composition penetrates and impregnates the associated textile material forming the supports, thereby consolidating the insulation.

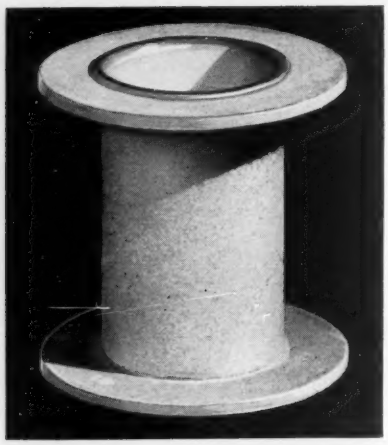
Reissue No. 17,992, SPRING TESTING AND ASSORTING MACHINE, Reissued March 10, 1931, to Loring P. Crosman, of Maplewood, New Jersey, Assignor to Monroe Calculating Machine Company, Inc., of Orange, New Jersey, a Corporation of Delaware. This is a machine for automatically comparing the tensile or compressive strength of wire coil springs with a standard. The invention comprises essentially a member upon which the spring is carried, a member adapted to engage the spring, and mechanism operable to urge one of the members in a direction to oppose the resistance of the spring by a force dependent upon the predetermined standard.

No. 1,797,289, COMPOSITE WELDING WIRE OR ROD MATERIAL, Patented March 24, 1931, by Charles J. Kotchi, of Chicago, Illinois, Assignor, by Mesne Assignments, to Koro Corporation, of Waukegan, Illinois, a Corporation of Illinois. The wire comprises a pair of half round welding metal members, interfitted, there being a channel for flux between members.

No. 1,797,787, SPRING STRUCTURE, Patented March 24, 1931, by David T. Owen, of Cleveland Heights, Ohio, Assignor to The Owen Automatic Spring Machinery Company, of Cleveland, Ohio, a Corporation of Ohio. A coil spring unit is disclosed in this patent whereby a number of spiral springs are arranged in a row, each of the springs, except one at the end of the row, terminating in free flexing extremities, and a clip being rigidly connected to each of the extremities and hinged to an adjacent spring in the row.

No. 1,797,967, METHOD OF PRODUCING SEAMLESS CONNECTIONS OF THE ENDS OF METAL WIRE GAUZE, Patented March 24, 1931, by Hermann Schubert, of Walderk, near Niemes, Czechoslovakia, Assignor to The Firm of Hutter & Schrantz A. G., of Vienna, Austria. The method of producing a seamless connection of the ends of metal wire gauze, particularly for paper-making machines, consists in removing the end-weft wire at one end of the gauze, pushing the projecting warp-wire ends onto the end-weft wire of the other end of the gauze so that they are disposed alternately above and below the end weft wire, the end weft wire of the one end of the gauze, onto which the projecting inflected warp wire ends of the other end of the gauze are pushed, being a metal wire which is thinner and harder than the weft wire of the remaining part of the gauze, while the end weft wire to be removed at the other end of the gauze is an ordinary weft wire, forcing down the applied inflected warp wire ends onto the thinner and harder ends weft wire, and subsequently firmly connecting the warp wire ends at both sides with this common end weft wire.

No. 1,798,298, PRESSURE PROTECTION COVERING FOR SUBMARINE CABLES, Patented March 31, 1931, by George Zapf, of Cologne, Germany, Assignor to Felten & Guilleaume Carlswerk Actien-Gesellschaft, of Cologne-Mulheim, Germany. The covering includes profile wires and the same having an inner supporting member for increasing the comprehensive strength of the wire, the supporting member consisting of profile bands inserted at regular distances between the profile wires of the pressure-protecting covering and stranded together with the same profile wires.



Low cost *non-returnable* **insulated wire reels**

AT last—an all-fibre, light weight, non-returnable reel for all types of insulated wire and light weight cable which cuts your shipping costs.

Note these points

Sturdy, rugged construction, secured by the use of a double barrel or core; standard ⅝-inch arbor opening; strong, rugged flanges; and lighter shipping weight because there is no metal or wood used in its construction. Flanges are moisture resistant and combustion resistant.

Samples gladly furnished

Write us for samples and full information. We will be glad to furnish you all details as to sizes in which these reels can be produced and furnish you all necessary samples for thorough tests in your own plant. In requesting quotation, kindly state the quantity or quantities in which you will purchase these reels; the overall dimension of flanges, traverse, and the distance from the outside of the core to the outside edge of flange; also weight of wire or cable it is desired to wind on the reel.

Cut your costs with this reel!

You are cordially invited to visit our exhibit at The Wire Show, Cleveland, Ohio—June 15 to 19 inclusive.

SEFTON
NATIONAL FIBRE CAN CO.
3285 Big Bend Boulevard
Maplewood, St. Louis, Mo.

Exports and Imports of Wire

Exports of iron and steel wire products in January and February, 1931
(In gross tons)

Items	February 1931	January 1931	February 1930
Wire rods	3,363	3,248	4,373
Hoops, bands and strips	3,797	3,448	5,121
Plain wire, iron or steel	1,162	1,508	2,083
Barbed wire and woven wire fencing	2,179	2,767	2,884
Woven wire screen cloth	99	65	144
Wire rope	276	248	568
Insulated wire and cable	33	65	78
Other wire and manufactures	471	395	797
Wire nails	561	978	532
Nails other than wire	256	375	535
Tacks	35	37	26
Bolts, nuts, rivets, except track	434	505	1,245
Totals, these 12 classifications	12,666	13,639	18,386

Imports of iron and steel wire and wire products into the United States
(In gross tons)

Wire rods	1,038	584	1,115
Concrete reinforcement and other bars	6,609	7,302	3,360
Barbed wire	403	629	695
Round iron and steel wire	389	174	275
Steel telegraph and telephone wire	2	6	1
Flat wire and strip steel	63	44	100
Wire rope and strand	89	156	155
Hoops and bands	1,248	1,559	1,731
Other wire	73	60	21
Nails, tacks and staples	625	584	274
Bolts, nuts, rivets and washers	92	141	49
Totals, these 11 classifications	10,631	11,239	7,776

FOREIGN Trade Opportunities reported by the Bureau of Foreign and Domestic Commerce during the month of April, included inquiries for wire or wire products from the following sources: Double brass eyelets (51014) Rosairio, Argentina; bench, hardwood, carpenters' screws (50964) London, England; iron and brass tubing for manufacture of bedsteads (50770) Santiago, Chile; iron spring wire and mild steel wire rods (50767) Copenhagen, Denmark; barbed wire and wire nails (50924) Santo Domingo, Dominican Republic; barbed wire-making machinery (50861) Tampico, Mexico.

EXPORTS of iron and steel products from the United States in February totaled 91,212 gross tons or 1,533 tons less than January. Imports during the month aggregated only 28,045 tons, being 12,736 tons less than in January. The exports to Japan included 994 tons of wire rods. Among the imports from Belgium was 1725 tons of ingot and 1515 tons of merchant steel bars. From France the imports included 659 tons of concrete reinforcement bars and 576 tons of Merchant steel bars.

RECEIPTS of card clothing totaled 8631 square feet valued at $11,505. All from Great Britain with the exception of 34 square feet valued at $167.

Imports of wire cloth and screening rose to 172,779 square feet, with Germany, Canada and France the sources of supply.

RECEIPTS of Fourdrinier and other paper-making wires totaled 47,928 square feet and included wires from Germany, France, Austria and Sweden. Imports of wire fencing amounted to 5,048,034 square feet, of which Germany supplied 2,330,492 square feet, the rest being divided between Belgium and the Netherlands. Wire heddle receipts aggregated 1,239,000 pieces, of which 700,000 originated in Switzerland and the rest in France. Wood screw imports totaled 26,720 gross, valued at $3,127. Sweden supplied 22,430 gross, ($2,662), the Netherlands 2,800 gross ($290), and Germany 1,040 gross ($175).

(*Continued from page 170*)

braking duty, ordinary straight drum control is not satisfactory for this type of service. The semi-magnetic control using a drum controller for the armature is satisfactory, however, as the line contactor takes all of the abuse and it is not necessary for the drum contacts to break any current.

An additional feature is usually provided with this type of equipment to prevent the loose end from whipping around at high speed when the end of the roll is reached. This would be particularly objectionable on high speed blocks. This objectionable feature is eliminated by providing an underload relay in the control so that when the load is suddenly removed from the motor, the underload relay acts and shuts down the block.

The control equipment for a brush-shifting adjustable speed commutator a-c motor is simpler than that required for d-c motor which is operated from a constant potential bus. The adjustment of speed on a BTA commutator motor is obtained by shifting the brushes. The brushes can either be shifted by means of a hand wheel mounted directly on the end of the motor or, if this is inconvenient, they may be shifted from a remote position by means of a chain and sprocket or else by a small pilot motor.

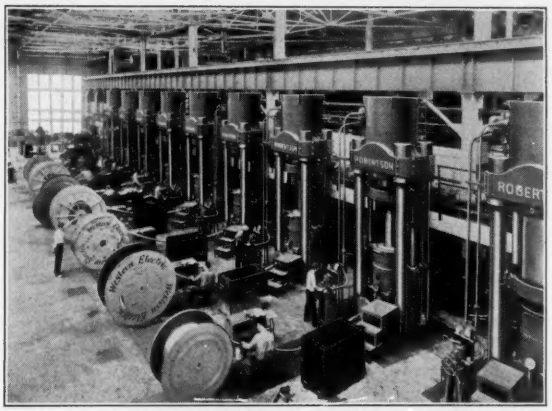
The low speed required for threading is obtained by cutting in resistance in the secondary almost exactly as in the case of the wound rotor induction motor.

The BTA motor, of course, has no dynamic braking on the "off" position as the d-c motor has.

Multi-Pass Machines

The multi-pass machine usually consists of four or five blocks which are driven from a single motor by a line shaft, exactly as the group drive first described. It is not strictly a continuous machine, being rather a machine for drawing through four or five dies simultaneously with only an approximate variation in speed of the block being allowed by some permanent change in gear ratio

(*Please turn to page 186*)

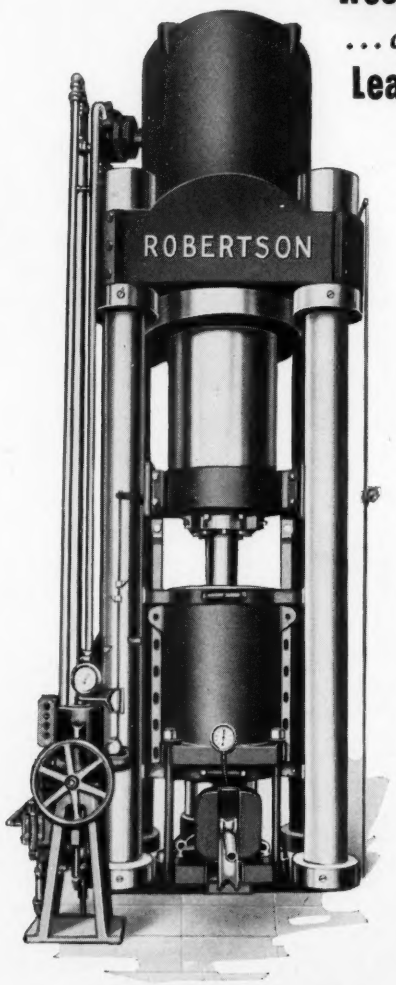


Partial view of Lead Cable Department, Point Breeze Plant, Western Electric Company, Baltimore, Md.—showing some of the Robertson Lead Encasing Presses installed there.

Western Electric Co. ...

... also uses Robertson

Lead Cable Encasing Presses



—This internationally known Company, is but one of a large majority of the Lead Encased Cable Manufacturers which uses ROBERTSON EQUIPMENT.

The invention of the telegraph and telephone and the generation of electric power commercially caused widespread development of the wire and cable industry and in that development Robertson Lead Presses have had an important part. During the past fifty years many improvements in the design, construction and capacity of Robertson equipment have been made, thereby meeting the increased demands for lead encased electrical wires and cables. Today Robertson Lead Encasing Presses and Equipment are used by practically all of the lead encased cable manufacturers in the United States and Canada and by many manufacturers in Great Britain, Europe and Japan.

John ROBERTSON CO. INC. *Pioneers-Since 1858*

123-131 Water Street Brooklyn, N.Y.

SEE OUR EXHIBIT AT THE WIRE SHOW, CLEVELAND, JUNE 15TH TO 19TH, INCLUSIVE

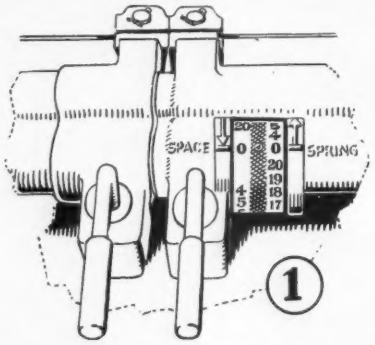
MICROMETER PRECISION MICRO-WELD TRADE MARK

Isn't Just a Name!
It's An Outstanding Feature!

Practical wire welding, in a wide range of sizes, is made possible through the use of this micrometer adjustment. It's new and it's different, and sales records during the past year indicate that this feature, together with many others, do count. See figure 1.

Are you concerned about your production costs? Does the insistant demand for better appearing and better constructed products, at lower prices, disturb your present set-up? You will be interested to know that MICRO-WELD Precision Welders are helping scores of production men to see their way out.

During the past year, when new equipment purchases have been cut to the bone by most manufacturers, competent managers, with vision and progressiveness, have increased output and saved money by installing these practical MICRO-WELD Machines by tens and dozens.

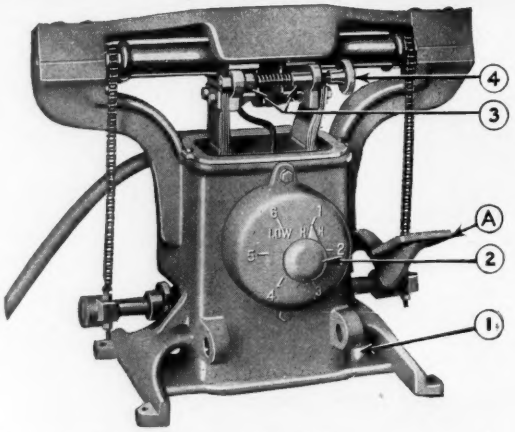


Users of Micro Welders give us production reports with increases amounting to as much as 15% per unit. Some of these welders have paid for themselves in two weeks.

Quantity production by straight line methods, together with present day lower prices for copper and aluminum, enable us to manufacture and sell these really fine precision MICRO-WELD Butt Welders and Spot Welders for prices that fit into your economy program.

Our Engineering Department will gladly assist you with your own welding problems, and we hope that you will permit us to serve you.

Having read our story, perhaps you are wondering if MICRO-WELD really does the business. Over two hundred satisfied users answer that question for us. Our list of customers includes the best known steel, copper and aluminum fabricating companies in the United States and Europe. Thirty of our machines are in operation in one plant.



This is Our Newest Model For Copper, Aluminum Etc.

Like every other MICRO-WELD it is designed to do its work BETTER and at LESS COST.
It welds $\frac{3}{16}$" to $\frac{5}{8}$" stock with a minimum of annealing at the weld, and the micro-adjustments are unusually accessible and simple.
No. 1 shows the location of the operating switch; No. 2 is the heat switch; No. 3 is the limit switch and limit switch adjustment; No. 4 is the space adjustment and A is the foot pedal control.
If you are interested in butt-welders or spot welders, you certainly should seek full information about the MICRO-WELD line.

MICRO PRODUCTS COMPANY

140 Industrial Street, Dept. 531.
PEORIA, ILL., U. S. A.

European Office, H. A. Schlatter & Co.
Zurich 1, Limmatquai 32, Switzerland.

(*Continued from page 185*)

between the block and the line shaft. The rod passes through the first die and thirty or forty wraps are made around the first block. The end of the wire is passed through the center of this block and into the next die and on to the next block. This thirty or forty wraps of wire around the block constitutes a reservoir, and either increases or decreases depending on the amount of draft taken on the next pass.

In threading up, the rod is passed through the die and a few feet drawn with the clamp hooked to the block as in the individual drive. The block is then given thirty or forty turns at full running speed. The machine is then stopped, the end of the wire unclamped from the block and pushed down through the center of the block into a guide pipe which brings it out in position to enter the second die. The process is then repeated for the next block, each being given thirty or forty turns to establish a sufficient supply to feed the succeeding block in case it requires wire somewhat faster than is given up by the preceding block. Any block will store up additional wire if the succeeding block does not take wire fast enough. In other words, the machine is merely four individual drives geared together in such a way that the heavy roll wire is handled but twice for four passes instead of eight times.

This handling of the wire is an important item, as the roll weighs from 150 to 300 lbs. and the production of any machine is apt to be limited by the operator's ability to handle the heavy rolls.

Obviously this type of machine requires the same sort of driving motor as required by the constant speed individual drive. A wound rotor induction motor is usually applied. Because of the low speed threading requirement, synchronous and squirrel cage induction motors are not applicable.

As yet there has been no demand for adjustable speed motors for this type of machine.

The control for this type of machine is usually full magnetic control from a single point master switch. It has been mentioned before that when the pointed wire is put through the die, it is caught by means of a clamp and a piece of

(*Please turn to page 187*)

(*Continued from page 186*)

chain which is attached to the block. The wire is drawn through the die first at slow speed and then at full running speed until the thirty or forty wraps are made. The motor is then stopped and the wire unclamped from the chain. Thus the requirement of the control is slightly different from the individually driven constant speed block in that only one point on the master switch is actually required. The control is so arranged that when the master switch is thrown to the "on" position, all of the resistance is in the secondary which allows a slow speed for the first few seconds. After a definite time interval, in which the block has had an opportunity to take at least one or two wraps of the wire around itself, the secondary resistance is automatically shorted out by the time operated contactor. The control for this type of machine has progressed from the multi-point master switch to the present single point master switch. It was formerly thought that the additional points on the master switch were necessary, but experience has proven that the control just mentioned is entirely satisfactory and saves time in view of the peculiar threading requirement.

The machine is equipped with a safety bar or loop across the entire front which is connected to the master switch by a link motion so that the bar can be used for regular operation as well as for emergency. The master switch is usually mounted underneath the machine. The control is usually made non-reversing as it is not necessary to plug the motor to bring it to a quick stop.

Continuous Machines

There are several types of strictly continuous machines on the market. They are widely used for copper wire and other soft wires and are also now used for steel and iron wire. The machine consists of several dies, each followed

(*Please turn to page 188*)

Metal Spools for Wire Drawing

Metal Spools for Annealing

Metal Bound Spools for Shipping

Metal Bound Reels for Shipping

Hubbard Spool Co.

1620-32 Carroll Avenue

Chicago

BALLOFFET

1870 — 1931

The Quality Diamond Dies

Balloffet Diamond Wire Dies Co., Inc.

13-15 East 22nd St., New York City

PLANTS AT

New York Lagnieu (France) Cluses (France)

Trevoux (France)

"RED HEAD"

PRODUCTS

FOR THE BETTER HANDLING OF

CABLE & WIRE

All Steel Reels

last longer

Constructed of corrosion resisting materials, three to four times the life of a wooden reel is a reasonable expectancy. The cost of a "Red Head" Reel is less than twice the cost of a wooden reel.

reduce freight

Appreciably lighter than wooden reels, "Red Head" Reels cost less to Ship— a cumulative saving that more than offsets increased first cost.

reduce investment

The longer life of "Red Head" Reels reduces the investment in reel equipment.

reduce repairs

Service records show that wooden reels require frequent repairs and rebuilding. With "Red Head" Reels such repairs have been radically reduced.

increase protection

Smooth inner surfaces: Much greater strength with the absence of all cutting or abrading projections—these protect not only the cable but the men handling it.

equipped with "RED HEAD" quick detachable steel lagging, are lighter than their equivalent in wooden reels, and offer the acme of protection to the cable.

Manufactured and Sold by

R. B. HAYWARD COMPANY

1714-1736 Sheffield Ave., Chicago and Graybar Bldg., New York

Manufacturers of

SHIPPING Red Head MACHINE REELS

FOR THE WIRE & CABLE INDUSTRY

Under license arrangement with Electrical Research Products, Inc. Subsidiary of Western Electric Company, Incorporated.

YOU ARE CORDIALLY INVITED TO VISIT OUR EXHIBIT IN BOOTHS 44 & 45 AT THE WIRE SHOW IN CLEVELAND, JUNE 15 TO 19 INCLUSIVE

(*Continued from page 187*)

by a drum around which the wire makes one turn and passes directly to the succeeding die. These drums are geared to give speeds inversely proportional to the area of dies and the wire is taut from the first die to the last block. Any variation from the theoretical values must be compensated for by slippage around the drums. Some types of continuous machines drive the drums through differentials and are thus able to compensate for small errors in the die size.

Type of Drive

The requirements for continuous machines vary slightly with the type of machine, but as a rule are the same as for the multi-pass machine just described. That is, a wound rotor induction motor provides the low speed for threading.

Control

The control is similar to that required for the multi-pass machine described above. It may be desirable to provide a definite point on the master switch for threading speed and a second definite point on the master switch for running speed as it is not required to take thirty or forty loops around each block, but only one or two loops.

Reeling

It is necessary to provide some auxiliary drive to reel up the wire after it comes out of the continuous machine, if it is to be spooled.

The control for such a reel is usually actuated by some tension sensitive device, such as a rider on the outgoing wire, or by disc friction clutches which drive the reel. In most cases disc clutches are sufficiently effective for reeling heavy wire but for high speed spooling of fine wire a sensitive tension device such as described below is essential.

The speed of the reel is adjusted as the reel builds up to hold this tension constant. Such a reel may be driven by a constant speed a-c

(*Please turn to page 189*)

Electrical Equipment For Wire Drawing

(*Continued from page 188*)

motor through some sort of clutch or by a d-c adjustable speed motor. In one case the clutch is caused to slip when the tension desired is exceeded and in the other case the speed of the d-c motor is controlled.

Probably the most satisfactory means of holding constant tension on the outgoing wire and adjusting the speed of the reel motor to compensate for reel build up is the "Thyratron Constant Loop Control."

This form of control consists essentially of a rider pulley or sheave around which the wire is looped. This floating sheave is linked to the iron core of a small solenoid. As the sheave tends to raise or lower the iron core, the inductance of the solenoid coil is changed. This change of inductance causes the Thyratrons—small grid controlled mercury arc rectifiers—to rectify more or less alternating current into direct current. The direct current voltage output of the thyratron is almost directly proportional to the position of floating sheave.

For small motors up to about 1 hp., this direct current voltage is impressed directly on the armature of the separately excited machine. A movement of about 1¼ inches of the sheave will adjust the motor speed from zero to base speed. Hence the appropriate title "constant loop control."

For reel motors larger than 1 hp., although there are thyratrons available that will control much larger motors by armature voltage, it is found economical to use the smaller capacity Thyratrons and apply them to the field of the motor to be controlled. Magnetic control is required for the armature, of course. In this way the motor is slowed down as the reel builds up.

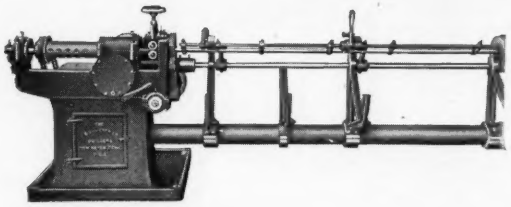
It should be noted that this action is independent of the tension to be held, and is truly a constant loop control. The tension to be held is readily adjusted by hanging more or less weight on the

(*Please turn to page 190*)

EXACT LENGTHS OF WIRE

CUT ON

SHUSTER STRAIGHTENING AND CUTTING MACHINES



Geared for high speed. Steel fliers, Timken Bearings, and other special patented features.

May we send Catalogue No. 30?

The F. B. Shuster Company New Haven, Conn.

Straightener Specialists Since 1866

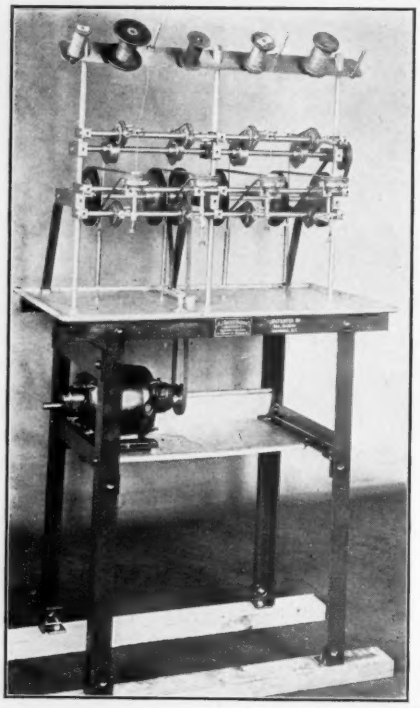
VIANNEY

DIAMOND DIES

MADE IN FRANCE

100 FIFTH AVE · NEW YORK

The Haddow Die Re-Cutting and Polishing Machine will lower your die re-cutting cost to a fraction of present costs



Recuts dies about ten times faster than by the needle and dust methods and with less diamond dust.

Any unskilled operator can learn to handle it quickly and efficiently.

ONE MONTH'S SHOP PRODUCTION

Total number of dies cut —1047

Total number of hours required—182.5

Average number of dies per hour—5.73

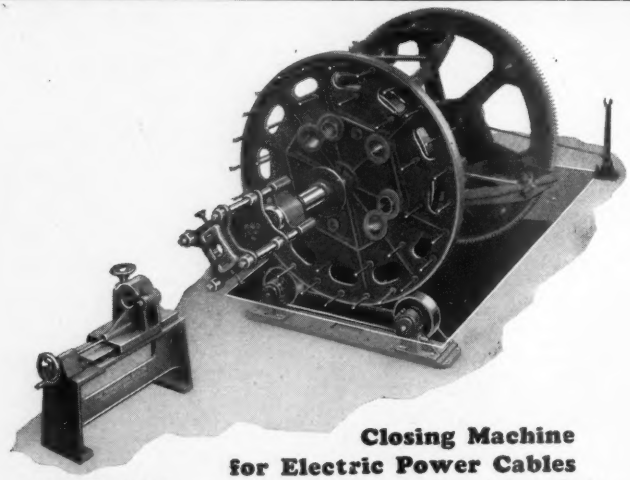
Number of operators—1

With only one man—This machine will do the work now requiring four to six men in less time and at lower cost.

4 HEAD MACHINE—Also Made in 6-Head size (With 2 Heads for Heavier Dies).

"You are cordially invited to see this machine in operation at the Wire Show, Cleveland Auditorium, June 15 to 19".

WILLIAM HADDOW
17 Eastern Ave.
Ossining, N. Y.



Closing Machine for Electric Power Cables

THIS machine receives two, three or four reels, as desired. Reels 48" Dia. x 36" over all width, held in position inclined to hollow main spindle, minimizing bending of conductors.

Planetary or rigid frame operation as desired, spindles provided for filler cops.

Twisting plate, closing die, capstan and receive reel take up arc included.

Machinery for the manufacture of rod, wire and cable — Special Machinery.

The Torrington Mfg. Co.
Torrington - Conn, U.S.A.
44 Franklin St.

(*Continued from page 189*)

floating pulley. The law of gravity until repealed, will see to it that the tension remains constant, regardless of what the linear speed or the reel diameter may be.

For reeling fine copper wire, where the tension adjustment must be delicate, the inertia of the floating sheave should be made as low as possible so that sudden changes in relative linear speed will not increase the tension momentarily. The inertia of the reel and reel motor armature will of course have no effect.

It is desirable to eliminate any tendency to hunt in such a system. For fine wire reeling a small air or oil dashpot is supplied as part of a small control panel along with the solenoid and limit switches. For heavier work it is not feasible to supply this dashpot as part of the electrical equipment and it is expected that the machine builder will supply this along with the floating pulley system.

So far this thyratron control has found its principal use in reeling wire and strip, but should the industry require it, this form of control may be readily adapted to control individually driven capstans on continuous wire drawing machines.

"Power Presses and Allied Equipment," Waterbury Farrel Foundry & Machine Co., Waterbury, Conn. This is a complete catalog covering all of this company's power presses and other cutting-up shop machinery, is divided into 11 sections each devoted to one type or style of press. Section 12, is a very elaborate general index and in addition to which there is given a classification of all Waterbury Farrel machinery and a couple of useful tables round out this beautifully bound 300 page book.

The Detroit Wire Die Company has moved its plant from 4721 Elmhurst Avenue to 6106 Linwood Avenue in that city.

The company manufactures diamond dies and tungsten carbide wire drawing dies.

PHILLIPS AWARDS ROD MILL CONTRACT

The Eugene F. Phillips Electrical Works, Limited, of Montreal, Can., have awarded a contract for their new copper rod rolling mill. After careful consideration it was decided to install a semi-automatic mill equipped with roller bearings throughout, having a minimum rated output of 15 tons per hour of ¼" copper rod.

The contract was placed with the Dominion Engineering Works, Limited, whose guaranteed performance both for copper output and power consumption outweighed proposals received from other sources, to say nothing of the fact the mill would be built in Canada.

The total cost of the mill and equipment will be approximately $225,000.00. The Dominion Engineering Works, Limited, are co-operating with the Farrel Birmingham Company, Inc. of Ansonia, Connecticut, who for many years, have specialized in this type of rolling mill equipment.

Wire and Wire Products Exports In 1930 Decreased 41%

Sales of American wire and wire manufacturers to foreign consumers have made large gains in the last few years, but they are still less than before the war. Last year they showed a marked decline. While not yet up to the 18,800 tons per month in 1913, the foreign sales of 11,800 tons monthly in 1929 and 11,600 tons in 1928, exceed the 8,800 tons in 1927. The 1929 excess was nearly 34% over 1927. But to December 1st, last year, at 6,880 tons per month, they are about 41% under 1929.

GERMAN WIRE CARTEL

The German wire cartel reports that there is no hope at present to get the Belgian wire industry to join the cartel. The Belgian wire industry is fighting one against each other and also the French cartel members are not unanimous in their attitude concerning the establishment of a continental wire cartel.

Every Wire Mill Has Its Own Ideas As To The Proper Method of Annealing!

ANNEALING POTS

Furnished in any practical size or shape. With either single or double bell offset at top and with or without lifting holes as shown.

COLUMBIANA

Annealing Pots and Pans — **Lead Melting Pots**
Galvanizing Pots and Kettles — **Salt Annealing Pots**

Are Designed to Fit Special Needs and Individual Requirements.

Our engineers are at your disposal. Your inquiries solicited.

COLUMBIANA BOILER COMPANY
COLUMBIANA, O.

WIRE DRAWING Machinery and Equipment

Rod Frames—16" Frames
8" Frames—Take-Up Frames
Wire Pointers—Puller Tongs
General Castings for Wire Mill Use
Circulars on Request.

E. J. SCUDDER FOUNDRY & MACHINE CO. TRENTON N. J.

STEELSKIN

REG. U. S. PAT. OFFICE

For High or Low Carbon Wire

WIRE DRAWING SOAPS

Established 25 years.

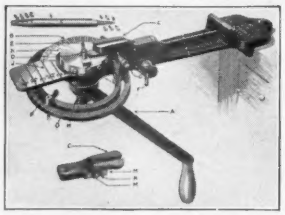
R. H. MILLER CO., Inc. Homer, N. Y.

Kilmer's LITTLE GIANT Wire Former

Forms Eleven Sizes of Eyes from Flat, Round, Square, or Half-Round Stock, also almost any shape desired **QUICKLY AND EFFICIENTLY.**

Adjustable for No. 3 to No. 24 Gage Wire. The cut on the left shows a few of the thousands of the forms made on this FORMER.

Price $50.00



Patented April 2, 1918

LITTLE GIANT Wire Straightener

Adjustable Wire Reel Price $12.00

Simple, easily adjusted and moderately priced, embodying necessary features to rapidly straighten wire at a minimum cost. Straightens and cuts No. 8 to No. 18 wire to any length. Strongly Constructed. Easily Operated. **Price $85.00.**

Patents Pending

Appointments may be made at Wire Association Booth during Show.

M. D. Kilmer & Company

6001 Quimby St., CLEVELAND, OHIO, U.S.A.

The Standard for High Carbon Wire

English Brand Wire Drawing Soap

Proven efficiency by years of continuous use.

THE J. T. ROBERTSON CO., INC.

SYRACUSE, N. Y.

Wire drawing soap specialists since 1893.

NEW PRICES NOW!

WRITE FOR THEM TODAY!

BELLET

COMPOSITION AND DIAMOND DIES

315 FIFTH AVE., NEW YORK, N. Y.

U. S. STEEL GET KRUPP LICENSE

"An arrangement has been concluded by the United States Steel Corporation with Fried, Krupp, A. G., Germany, whereby the subsidiary companies of the Steel Corporation are licensed by Krupp under various patents of Strauss, Johnson, Armstrong, Fry, Kuehn and Smith for rust-resisting and heat-resisting and other alloy steels and for the heat treatment thereof.

"This arrangement, which includes collaboration of Krupp with respect to technical matters in connection with corrosion-resisting and heat-resisting steels, will apply to the products of the Illinois Steel Company, Carnegie Steel Company, American Steel & Wire Company, American Sheet & Tin Plate Company, National Tube Company and Lorain Steel Company. The major Products manufactured by these companies in corrosion-resisting and heat-resisting steels include shapes, plates and bars, wire products, rope, sheets, tubes and castings."

The rights acquired by the United States Steel Corporation for the use in this country of the Krupp process for manufacturing stainless and other special metals such as heat-resisting steel are the same as those already acquired by other American steel companies. Companies which already are licensed to use the processes include the Crucible Steel Company of America, th Central Alloy Steel Company, which is a subsidiary of the Republic Iron & Steel Company; the Allegheny Tube & Steel Company and others.

The significance of the contract signed today is that the Steel Corporation has made a direct arrangement with the Krupp Works for use of their metal processes, whereas the other licensed American steel manufacturers have acquired the rights, indirectly, through the Stainless Steel Association of companies which use the manufacture of stainless and heat-resisting steels.

American to Make Preformed Wire Rope

The American Cable Co. will manufacture preformed wire rope under a license agreement, the patents covering this material being owned by the American Cable Co. In addition the company has concluded license contracts for the manufacture of this material with the General Cable Co.; five leading rope manufacturers in Canada; British Ropes, Ltd. and its various subsidiaries, the largest manufacturers of wire rope in the United Kingdom, together with four other companies in Great Britain; Australian Wire Rope Works, Ltd.; and Felten & Guilleaume, the largest producers of these products in Germany and Continental Europe. Negotiations are also pending for similar contracts with other manufacturers.

Preformed wire rope is said to be the first basic improvement in wire rope construction in 80 years. In its manufacture, the wires and strands are preformed and preshaped to the exact helical "lay" which they assume in the finished rope. The result is freedom from internal torsional stress. This factor, it is claimed, substantially increases the length of services.

Old Reel Firm 'Coming Back'

The wire industry will be glad to learn that the Apco-Mossberg Corp., Attleboro, Mass., engaged in manufacturing reels and other accessories for the wire trade for more than 20 years, is making rapid progress under the management of Lewis R. Smith, receiver. Factory personnel is operating on a 5-day week with a considerable volume of orders booked for the early future.

This firm which originated many new and worth while spool and reel designs for use in annealing, vulcanizing, stranding or other special uses in wire mills throughout the country, will continue to function and to serve the industry as in the past.

The engineering staff has been increased recently and stands ready to offer cooperation from an engineering point of view on any new wire spooling or reeling problem.

"PREMIER"
Trade Mark Reg. U. S. Pat. Off.

USERS REPORT:
—Less interrupted production
—Less repair work
—Less replacements

As wire drawers for over 30 years, your problems are ours. We have worked them out for ourselves and PREMIER dies made for your individual needs will work out your most difficult die job.

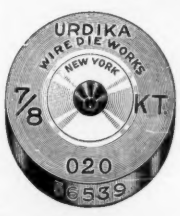
DRIVER-HARRIS COMPANY
HARRISON, NEW JERSEY
Chicago - Detroit - Morristown, N.J. - England - France
Cleveland — Alloy Makers since 1809 — Italy

THE MOST RELIABLE
DIAMOND DIES
ON THE MARKET TODAY
USE OUR DIES
FOR SAFE and SUSTAINED PRODUCTION
COCHAUD WIRE DIE CORP'N
Manufacturers of
WIRE DRAWING DIAMOND DIES
Factories: TREVOUX; Pont-De-Vaux-France
NEW YORK, 300 West 56th Street
Tel. Columbus 5-1340

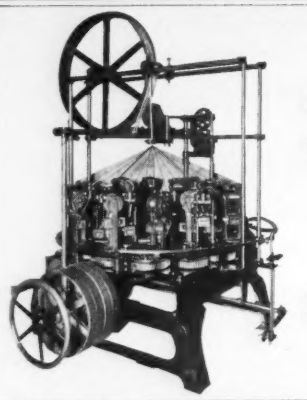
ADDOR
WIRE DIE WORKS

Diamond Dies in all sizes
For all kinds of Wire
104 Fifth Avenue
Crushing Bortz and Splints.
Dies repaired like new.
New York City

URDIKA
WIRE DIE WORKS, INC.
129 FULTON STREET, NEW YORK CITY



STEEL SET
DIAMOND DIES
ALLOY DIES
ACCURATE SIZE
Smooth Draw
Highest Quality



WIRE BRAIDERS

Multiple Head Wire Covering Braiders

Single, Double or Triple Deck Wire Covering Braiders

Single, Double or Triple Deck Cable Braiders

FIDELITY MACHINE COMPANY

Philadelphia, Pa.

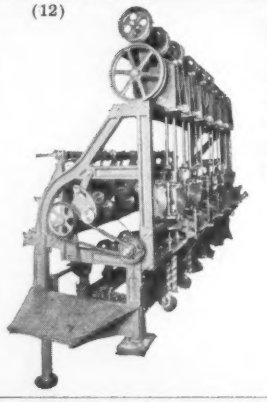
WIRE BUNCHING MACHINES
WIRE STRANDING MACHINES
TWINNING MACHINES Up to And Including
SEVEN CONDUCTORS

(Manufactured under the Dawes Patents)

HASKELL-DAWES MACHINE CO., INC.

Ontario St. Below Trenton Ave.,
Philadelphia, Pa.

(12)



VERTICAL MODEL TAPING MACHINE

for applying 3 Tapes on each of six lines of wire, for flat or round conductor, with wire straightening rolls and individual traverse for each line of wire; motor or belt drive.

EST. 1855 AIMCO INC. 1918
"American" INSULATING MACHINERY COMPANY
REG. U.S. PAT. OFF.
517 Huntingdon St.,
PHILADELPHIA PENNSYLVANIA U.S.A.

DEALING IN GOOD USED EQUIPMENT
WE SAVE YOU MONEY AND TIME

SOME ITEMS IN OUR STOCK

½" Shuster Straightener with 12' 0" Cut off.
¼" Shuster Straightener with 3' 0" Cut off.
No. 1 Sutton Round Bar Straightener.
No. 1 and No. 2 Waterbury Farrel Triple Die Horizontal Swaging Machines.
5-No. 1 Cone Waterbury Farrel 10 Die Fine Wire Machines with Spooling Attachments.
Draw Benches — Bull Blocks — Hot and Cold Rolling Mills.

Let Us Quote on Your Requirements
Offer Us Your Surplus

F. H. CRAWFORD AND CO., INC.

50 Church St., New York City Phone Courtland 2356

New Wire Alloy Promises Much

A new silicon bronze alloy, Duronze, has been developed and put on the market by the Bridgeport Brass Co., for which remarkable properties are claimed. Starting with a strength of approximately 42,000 lbs. per square inch the annealed condition, "Duronze" develops a strength of approximately 130,000 lbs. per square inch when severely cold drawn. Cold drawing, however, does not make it brittle.

Duronze rod, which has a tensile strength of approximately 100,000 lbs. per square inch can be readily upset and roll threaded in the manufacture of cap and machine screws. Heads formed by this cold upsetting process are not weak and brittle. Duronze can also be hot worked or hot forged. It is said to resist corrison better than brass or copper, standing up remarkably well in dilute sulphuric and dilute hydrofluoric acids.

It is also immune to season cracking and does not crack under the action of ammonia gases. It also does not become brittle when immersed in mercurous nitrate solution, which completely amalgamates with brass and causes it to become fragile.

Wire Screen Cloth Makers Form an Institute

The Wire Screen Cloth Manufacturers' Institute has been organized by some of the important companies in that industry. George E. Watson, formerly sales manager of the Wickwire Spencer Steel Co., Buffalo, has been appointed general secretary, with office at 74 Trinity Pl., New York. The purposes of the institute are to operate a trade extension bureau to assist jobbers and dealers in selling wire screen cloth; to collect statistics; to study manufacturing methods, safety transportation and merchandising problems; to promote standardization of product, and to develop a uniform method of cost accounting.

5/16 inch Rod
to .002 inch Wire

And All Gauges Between

spliced speedily
with

"Handy"
SILVER
SOLDERS

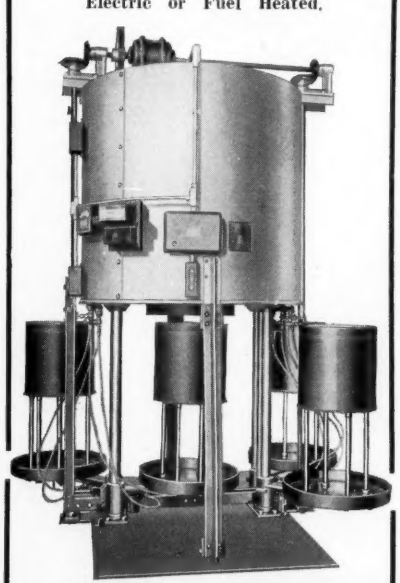
and the joints are stronger than the wire itself.

"Handy" Silver Solders braze all metals fusing above 1400° F.

Send for our interesting Bulletin 3WW.

HANDY & HARMAN
57 William St.,
NEW YORK

KENWORTHY
Non-Oxidizing Furnaces
For The Dry Bright Annealing of Non-Ferrous Wire.
Electric or Fuel Heated.



ECONOMY AND EFFICIENCY
Write For Bulletin III
Charles F. Kenworthy,
Incorporated
WATERBURY, CONN.

No Rejects

(*Continued from page 176*)

would be pleasant to hear them riding their friend Newman from the same company's plant at Hartford, Conn. Everybody who draws spoke will be trying to learn from Jack Breining of Pittsburgh Steel how he does it. Both he and Phillips of Bethlehem (Johnstown) will go home with their little secret still packed away in their hats, complacently aware that even efforts such as theirs will be emulated and duplicated by aggressive men.

Our Canadian friends will undoubtedly become stimulated by dry American liquid lightning. The continuous machine men will quite blatantly extol the virtures of their gadgets and die men both promise and threaten unlimited production from shapes not unlike Cleopatra's. The American Steel and Wire men will nod politely and serenely, aware that there is no God but Allah. It ought to be a real show!

The Lockport Lead Company, formerly of Lockport, N. Y., is now located in Cleveland, O., at 7700 Bessemer Avenue. The company will produce antimonial lead and soft lead, in pigs, bars and ingots. C. A. Johnson is president; D. H. Smith, vice-president and C. Z. Johnson, secretary-treasurer.

"The Cleaning of Metal," Magnus Chemical Co., Garwood, N. J. Appears like a textbook, written by a prominent Ph D, and gives splendid advice on processes, methods and materials for metal cleaning, with practical suggestions for their use and not entirely hidden suggestions for the use of the Magnus company's products. With tables, technical glossary and many illustrations to make the books more valuable.

"Pressed Steel Reels & Spools for the Wire Industry" Mossberg Pressed Steel Corp., Attleboro, Mass. Catalog Number 104, describes briefly the many reels, and spools for the wire industry ranging in size from 1 in. in diameter to 10 ft.

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The Waterbury
Wire Die Co.

Diamond, Composition
and
CHILLED IRON DIES
Waterbury, Conn.

The Carboloy Company, Inc., on March 15, 1931, opened a die sales office and factory in the Rea Building, 704 Second Ave., Pittsburgh, Pa.

The new Pittsburgh factory is equipped with the most advanced machines designed to manufacture uniform dies, and a capable service man will be available at all times to render complete die service.

Mr. K. R. Beardslee will have charge of sales in this district.

The Western Die Sales Div. is no longer in Cleveland, but is now located at 144 Orange St., Newark, N. J.

Construction of a copper rod and wire mill at El Paso, Texas, to cost $1,500,000 is under consideration by the Nichols Copper Company, according to C. W. Nichols, chairman of the board.

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IDEAL CONVENTION FACILITIES

"Allegheny Alloys" to Designate Group of Chromium Steels

The Allegheny Steel Company has taken a step in the direction of ending the confusion prevalent in the alloy field as a result of the large number of trade names used. Effective immediately, this company will use the name Allegheny in connection with all its products. The whole group of chromium and chromium-nickel alloys made by the company will be known as "Allegheny Alloys." The name of Allegheny Metal, the 18 and 8 alloy, will remain unchanged, but the alloys hitherto bearing the name of Ascoloy hereafter will be known as Allegheny 33, 44 etc., using the same differentiating numerals that are now used with the word Ascoloy.

Under the new nomenclature the better known members of the Allegheny alloys family will be known by the names Allegheny Metal (17-20% chromium 7 to 10% nickel), Allegheny 33 (12 to 16% chromium), Allegheny 44 (22 to 25% chromium, 10 to 13 nickel), Allegheny 55 (chromium 26 to 30%), Allegheny 66 (15 to 18% chromium).

The executive, general sales, and advertising departments of Revere Copper and Brass Incorporated are now located in the New York Central Building, 230 Park Avenue, New York City, instead of at Rome, New York.

The officers of the company who will not make New York their headquarters, are C. Donald Dallas, president; George F. Stanton, vice-president and general sales manager; and J. A. Doucett, vice-president and assistant general sales manager.

The treasurer's office and general accounting department will remain in Rome, New York.

"Bunchers, Stranders and Concentric Layers", Haskell-Dawes Machine Company, Philadelphia, Pa. This 1929 catalog describes the machines indicated by this title and gives the general dimensions of the more popular sizes.

The Alloy Metal Wire Company, Inc., Moore, Pa., have recently installed a new United 4-High Rolling Mill for the production of cold rolled strip in widths up to 16 in. and thicknesses from 1/8 in. to .003 in. With such specialized equipment this company is in a position now to furnish stainless steel strip, wire and rod for all purposes where specifications call for finer precision limits than ordinarily reached.

The Eaton Axle and Spring Company has completed arrangements to acquire the Reliance Manufacturing Company of Massillon, Ohio. The combined assets are approximately $20,000,000.

Statement of ownership, management, circulation, etc., required by the Act of Congress of August 24, 1912, of Wire & Wire Products published monthly at Washington, N. J., for April 1, 1931.

State of New York, County of New York, ss.: Before me, a Notary Public in and for the State and county aforesaid, personally appeared Richard E. Brown, who, having been duly sworn according to law, deposes and says that he is the Publisher of Wire & Wire Products and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Quinn-Brown Publishing Corporation, 551 Fifth Avenue, N. Y. City; editor, Morris A. Hall, 551 Fifth Avenue, N. Y. City; managing editor, none; business manager, Richard E. Brown, 551 Fifth Avenue, N. Y. City.

2. That the owner is: (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given.) Quinn-Brown Publishing Corporation, 551 Fifth Avenue, New York City. Geo. I. Baker, Richard E. Brown, Leta B. Brown, all of 551 Fifth Avenue, New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding one per cent of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

RICHARD E. BROWN,
(Signature of Publisher)

Sworn to and subscribed before me this 25th day of March, 1931.

(SEAL) L. D. SCHWAERER,
Notary Public.

My commission expires March 30, 1932.

Reports on White Rust on Zinc-Coated Wire

The so-called "white rust" often observed on the surface of zinc-coated wires, has been the subject of a painstaking investigation in Germany by E. H. Schulz, who has recorded the results of his research in a recent issue of "Stahl und Eisen".

Herr Schulz states that white rust is most frequently observed in cases where the galvanized material is exposed to the action of sea water. It is noticed also in cases where pieces are packed so closely that, upon wetting by rain or dew, subsequent drying is retarded. This would apply to wires wound rather closely on spools.

It has been determined that the rusting of zinc coatings in sea water is a fundamentally different process from that which is occasioned by the action of condensing moisture in confined spaces. The former is due to a particular action of chlorine and of small amounts of magnesium. In the latter case the reaction is described as follows:—Initial formation of zinc hydroxide takes place when water remains in contact with zinc for an appreciable length of time. The solution formed is hygroscopic, so that, once the reaction starts, it proceeds indefinitely by absorption of additional water from the air. Carbon dioxide is also absorbed from the atmosphere and causes the formation of basic zinc carbonate. By analysis of the samples of rust it is found to contain zinc oxide, hydroxide, and carbonate. The remedy for white rust is to be found in proper atmospheric conditions, free access of circulating air being the most important. The purity of zinc is claimed to have no influence whatever.

"Mosspeed Braiding Equipment" Mossberg Pressed Steel, Attleboro, Mass. A 16 page folder describing the advantages of the Mossberg Braider carrier in saving of yarn and superior finish. Details of the carriers as to size, weights etc., are given.

Professional Directory

Listing in the Professional Directory is recommended to all engineers, engineering and construction firms and consultants seeking business with wire mills or plants utilizing wire in any form.

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Consulting Engineer
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Practical Engineering Advice
Vanderbilt 7395

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For more complete information, consult the annual Directory, Index & Buyers' Guide.

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Charles F. Kenworthy, Inc., Waterbury, Conn.

ANNEALING POTS
Columbiana Boiler Co., Columbiana, O.
Scudder, E. J., Fdry & Machine Co., Trenton, N. J.

ARMORING EQUIPMENT
Amer. Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
John Robertson Co., Brooklyn, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Co., Paterson, N. J.

BAKERS
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

BRAIDER CARRIERS
Mossberg Pressed Steel Co., Attleboro, Mass.

CASTINGS—Wire Mill
E. J. Scudder Foundry & Machine Co., Trenton, N. J.

CLEANING & PICKLING EQUIPMENT
Vaughn Machinery Co., Cuyahoga Falls, O.

CRANES—Wire Mill
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

DIES—Chilled Iron
Waterbury Wire Die Co., Waterbury, Ct.

DIES—Diamond
Addor Wire Die Works, N. Y.
Balloffet Diamond Wire Dies Co., Inc., N. Y. C.
Bellet Diamond Die Works, N. Y.
Cochaud Wire Die Co., New York.
Driver-Harris Co., Harrison, N. J.
Globe Diamond Die Corp., New York.
Koebel Wagner Diamond Corp., Newark, N. J.
F. Krause & Co., Inc., Jersey City, N. J.
Master Wire Die Corp., New York, N. Y.
Union Wire Die Corp., New York, N. Y.
Urdika Wire Die Co., N. Y. C.
Vianney Wire Die Works, New York.
Waterbury Wire Die Co., Waterbury, Ct.

DIES—Composition
Addor Wire Die Works, N. Y.
Bellet Diamond Die Works, N. Y.
Urdika Wire Die Works, Inc., New York

DIES—Lead Extrusion
John Robertson Co., Brooklyn, N. Y.

DIES—Repairs & Re-Cutting
Addor Wire Die Works, N. Y.
Balloffet Diamond Wire Dies Co., Inc., N. Y. C.
Bellet Diamond Die Works, N. Y.
Cochaud Wire Die Corp., New York.
F. Krause & Co., Inc., Jersey City, N. J.
Urdika Wire Die Co., N. Y. C.
Vianney Wire Die Wks., N. Y.

DIES—Recutting and Repolishing Machine
Wm. Haddow, Ossining, N. Y.

DIES—Rod and Tube Drawing
Carboloy Co., Inc., Newark, N. J.
Master Wire Die Corp., N. Y.
Union Wire Die Corp., N. Y.

DIES—Tungsten Carbide
Bellet Diamond Die Works, N. Y.
Carboloy Co., Inc., Newark, N. J.
Master Wire Die Corp., New York, N. Y.
Union Wire Die Corp., New York, N. Y.

DRAW BENCHES—
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Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrel Fdry & Machine Co., Waterbury, Conn.

DRIVES—V-Belt
American Pulley Co., Philadelphia, Pa.

FLUXES—Soldering
Kester Solder Co., Chicago, Ill.

FURNACES—Lead Melting
John Robertson Co., Brooklyn, N. Y.

FURNACE—Non-Oxidizing Annealing
Charles F. Kenworthy, Inc., Waterbury, Conn.

GALVANIZING ENGINEER
W. H. Spowers, Jr., New York, N. Y.

GALVANIZING—Hot
Wallace G. Imhoff Co., Vineland, N. J.

GALVANIZING LADLES, PANS, POTS
Columbiana Boiler Co., Columbiana, O.

LATHES—Die Reaming
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
The Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.

LIME—Pulverized
Amer. Lime & Stone Co., Bellefonte, Pa.

LUBRICANTS—Wire Drawing
R. H. Miller & Co., Homer, N. Y.
J. T. Robertson Co., Syracuse, N. Y.

MACHINE—Die Re-cutting and Polishing
Wm. Haddow, Ossining, N. Y.

MACHINERY—Armoring (Cable, Wire Hose)
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.

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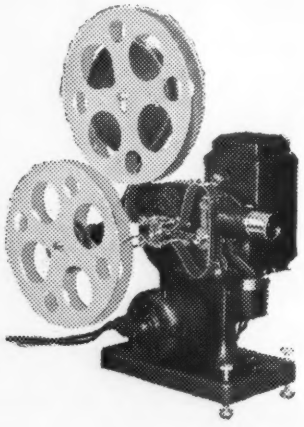

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Watson Machine Co., Paterson, N. J.

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Fidelity Machine Co., Phila., Pa.
Mossberg Pressed Steel Corp., Attleboro, Mass.
New England Butt. Co., Providence, R. 1.

MACHINERY—Bunching
Amer. Insulating Mach'y Co., Phila., Pa.
Haskell-Dawes Machine Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Bundling
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
Watson Machine Co., Paterson, N. J.

MACHINERY—Cable, Electric
New England Butt Co., Providence, R. I.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Company, Paterson, N. J.

MACHINERY—Chain Making
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Closing
Haskell-Dawes Mach. Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Co., Paterson, N. J.

MACHINERY—Coil Winding
Amer. Insulating Mach'y Co., Phila., Pa.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Coiling
Broden Const. Co., Cleveland, O.
Haskell-Dawes Mach. Co., Phila., Pa.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Co., Paterson, N. J.

MACHINERY—Copper Wire Drawing and Rolling
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrell Fdry & Machine Co., Waterbury, Conn.

MACHINERY—Cutting
American Insulating Mach'y Co., Phila., Pa.
Hallden Machine Co., Thomaston, Conn.
F. B. Shuster Co., New Haven, Conn.
Sleeper & Hartley, Worcester, Mass.

MACHINERY—Enameling
American Insulating Mach'y Co., Phila., Pa.

MACHINERY—Extruding
John Robertson Co., Brooklyn, N. Y.
Watson Machine Co., Paterson, N. J.

MACHINERY—Flat Wire
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Forming
Kilmer, M. D., Co., Cleveland, O.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Galvanizing Wire
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Gang Winders
Watson Machine Co., Paterson, N. J.

MACHINERY—Insulating
American Insulating Machinery Co., Phila.
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Lead Stripping
John Robertson Co., Brooklyn, N. Y.

MACHINERY—Lock Washer
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Magnet Wire
American Insulating Mach'y Co., Phila., Pa.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Measuring Wire
New England Butt. Co., Providence, R. I.
Watson Machine Company, Paterson, N. J.

MACHINERY—Nail
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Panning
American Insulating Machinery Co., Phila.

MACHINERY—Pointing
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Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
The Waterbury Farrell Foundry & Machine Co., Waterbury, Conn.

MACHINERY—Rivet
Waterbury-Farrell Fdry & Machine Co.,

MACHINERY—Rod Drawing
Morgan Const. Co., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury-Farrell Fdry & Machine Co., Waterbury, Conn.

MACHINERY—Rubber Strip Covering
American Ins. Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Screw Wire
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Spooling
American Insulating Machinery Co., Phila.
Torrington Mfg. Co., Torrington, Conn.
Waterbury Farrel Foundry & Machine **Co., Waterbury, Conn.**
Vaughn Machinery Co., Cuyahoga Falls, O.

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Lewis Machine Co., Cleveland, O.
F. B. Shuster, New Haven, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Stranding
American Insulating Mach'y Co., Phila Pa.
Haskell-Dawes Machine Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Co., Paterson, N. J.

MACHINERY—Strip Steel
Broden Const. Co., Cleveland, O.
Torrington Mfg. Co., Torrington, Conn.

MACHINERY—Swaging
Sleeper & Hartley, Worcester, Mass.
Waterbury-Farrell Foundry & Machine Co., Waterbury, Conn.

MACHINERY—Taping
Amer. Insulating Mach. Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Company, Paterson, N. J.

MACHINERY—Trolley Wire
Torrington Mfg. Co., Torrington, Conn.
Waterbury Farrel Foundry & Machine Co., Waterbury, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Tube
Torrington Mfg. Co., Torrington, Conn.
Waterbury-Farrell Fdry. & Machine Co., Waterbury, Conn.

MACHINERY—Used
Crawford, F. H., Co., N. Y.

MACHINERY—Welding
Micro Products Co., Peoria, Ill.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Winding
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Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Mfg. Co., Torrington, Conn.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wire Drawing
American Insulating Machinery Co., Phila.
Broden Const. Co., Cleveland, Ohio.
Morgan Construction Co., Worcester Mass.
E. J. Scudder Foundry & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Torrington Manufacturing Co., Torrington, Conn.
Vaughn Machinery Co., Cuyahoga Falls, O.
Waterbury Farrell Foundry & Machine Co., Waterbury, Conn.

MACHINERY—Wire Rope
New England Butt Co., Providence, R. I.
Watson Machine Company, Paterson, N. J.

MACHINERY—Wrapping Coils
Terkelsen Machine Co., Boston, Mass.

PACKING—Metallic Fibre
Hudson Wire Co., Ossining, N. Y.

POINTERS—Wire
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

POTS
Columbiana Boiler Co., Columbiana, O.

POTS—Lead Melting
John Robertson Co., Brooklyn, N. Y.

PRESSES—Lead Encasing
John Robertson Co., Brooklyn, N. Y.

PRESSES—Lead Extrusion
John Robertson Co., Brooklyn, N. Y.

PULLERS—Wire
E. J. Scudder Fdry. & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.

PUMPS—Hydraulic
John Robertson Co., Brooklyn, N. Y.

REELS AND SPOOLS—
R. B. Hayward Co., Chicago, Ill.
Hubbard Spool Co., Chicago, Ill.
Mossberg Pressed Steel Corp., Attleboro, Mass.

REEL AND TENSION STAND—
Sleeper & Hartley Inc., Worcester, Mass.

REEL CRUTCHES
R. B. Hayward Co., Chicago, Ill.
Watson Machine Co., Paterson, N. J.

SOAPS—Wire Drawing
R. H. Miller Co., Homer, N. Y.
J. T. Robertson Co., Syracuse, N. Y.

SOLDER
Kester Solder Co., Chicago, Ill.

SOLDER—Silver
Handy & Harman, N. Y.

SPOOLS—Wire and Cable
American Pulley Co., Philadelphia, Pa.

TRUCKS
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

VULCANIZERS
Watson Machine Co., Paterson, N. J.

WIRE—Various Kinds
Hudson Wire Co., Ossining, N. Y.

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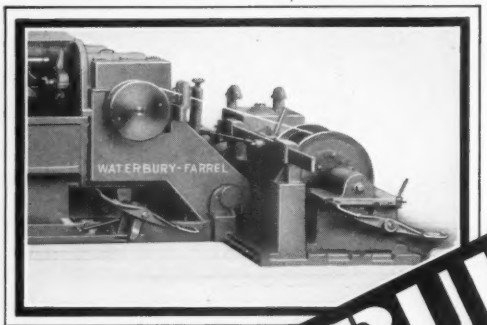
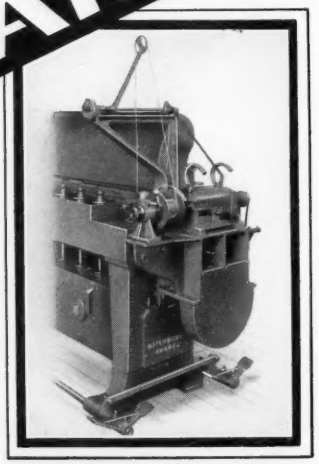
= WIRE SPOOLING MACHINERY =



For use with high-speed continuous wire drawing machines.

WATERBURY-FARREL



The floor type spooler, shown above, is furnished in two sizes and is intended for the heavier gauges. . . . . The spooling attachment illustrated at the right is for use with intermediate and fine wire drawing machines and is furnished in three standard sizes.

The Waterbury Farrel Foundry and Machine Company

WIRE DRAWING MACHINERY AND ALLIED EQUIPMENT

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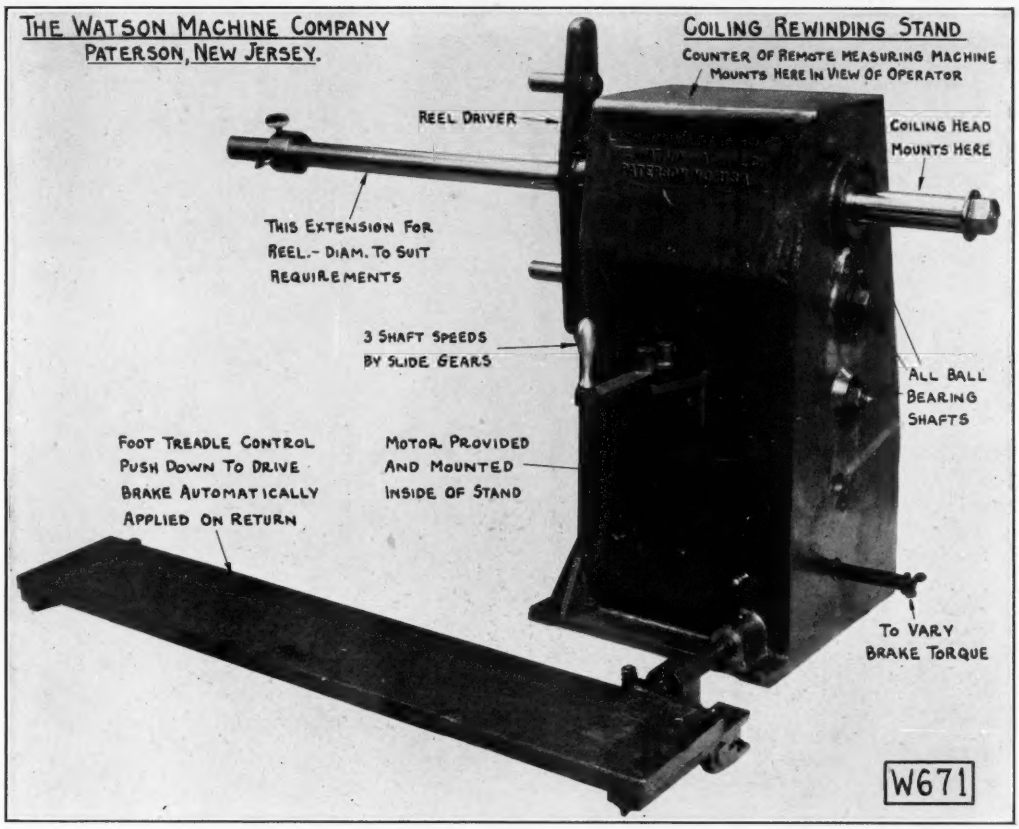
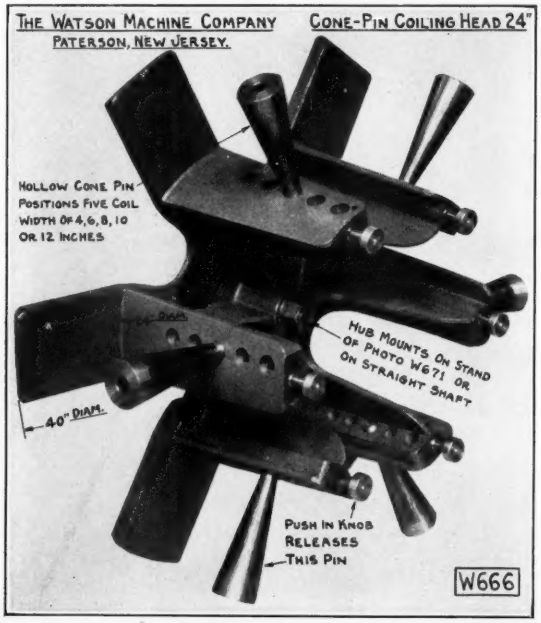
ELECTRICAL WIRE AND CABLE, WIRE ROPE AND CORDAGE MACHINERY

REWINDING-COILING STAND and COILING HEAD


THE WATSON MACHINE COMPANY
PATERSON, NEW JERSEY.
COILING REWINDING STAND
COUNTER OF REMOTE MEASURING MACHINE MOUNTS HERE IN VIEW OF OPERATOR
REEL DRIVER
COILING HEAD MOUNTS HERE
THIS EXTENSION FOR REEL.- DIAM. TO SUIT REQUIREMENTS
3 SHAFT SPEEDS BY SLIDE GEARS
ALL BALL BEARING SHAFTS
FOOT TREADLE CONTROL PUSH DOWN TO DRIVE BRAKE AUTOMATICALLY APPLIED ON RETURN
MOTOR PROVIDED AND MOUNTED INSIDE OF STAND
TO VARY BRAKE TORQUE
W671


THE WATSON MACHINE COMPANY
PATERSON, NEW JERSEY.
CONE-PIN COILING HEAD 24"
HOLLOW CONE PIN POSITIONS FIVE COIL WIDTH OF 4, 6, 8, 10 OR 12 INCHES
HUB MOUNTS ON STAND OF PHOTO W671 OR ON STRAIGHT SHAFT
40" DIAM.
PUSH IN KNOB RELEASES THIS PIN
W666

THIS IS AN IDEAL UNIT FOR SHIPPING ROOM AND WAREHOUSE USE, combining Coiling and Reeling in the minimum of space.

Installation cost reduced to that of wiring to the unit, as motor is provided installed inside of the stand.

Three speeds are quickly obtained by the slide gear change lever.

All shafts are ball bearing, and gears are cut.

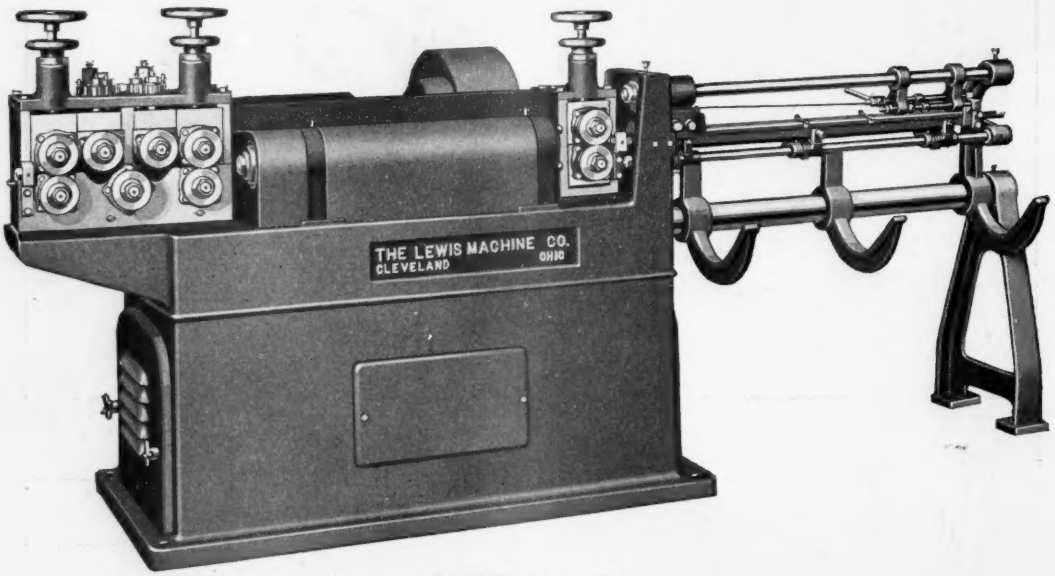
The foot treadle with automatic brake results in an extremely sensitive control, ideally suitable for this operation.

We have various types and sizes of Coiling Heads. As supplied standard, their hub is arranged to mount on the short shaft extension of the Rewinding-Coiling Stand.

GREATLY INCREASED PRODUCTION

WITH

NEW LEWIS WIRE STRAIGHTENING AND CUTTING MACHINE



LEWIS No. 8-C

50 to 75 percent increase in production made possible by improved design and construction

SPECIAL FEATURES

HIGH SPEED CUT-OFF—THREE SPEED TRANSMISSION

30 TIMKEN ROLLER BEARINGS — BUILT-IN V BELT MOTOR DRIVE

You are cordially invited to visit our exhibit at the Wire Show at Cleveland, June 15 to 19 inclusive

THE LEWIS MACHINE COMPANY

1603 E. 24 ST. CLEVELAND, OHIO